User Manual

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Draco tera

Model:
480 Series

IHSE GmbH
Maybachstrasse 11
88094 Oberteuringen
Germany
info@ihse.de
www.ihse.de
Tel. +49 7546-9248-0
Fax +49 7546-9248-48

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1 About This Manual

1.1 Scope

This manual describes how to install your Draco tera, how to operate it and how to perform trouble shooting.

1.2 Validity

This manual is valid for all devices listed on the front page. The product code is printed on the base of the devices.

1.3 Cautions and Notes

The following symbols are used in this manual:

This symbol indicates an important operating instruction that should be followed to avoid any potential damage to hardware or property, loss of data, or personal injury.

This symbol indicates important information to help you make the best use of this product.

1.1 Spellings

You can find the following spellings in the manual:

Spelling	Description
<key>	Description of a key on the keyboard
<key> + <key>	Press keys simultaneously
<key>, <key>	Press keys successively
2x <key>	Press key 2x in quick succession (cf. mouse double click)
Menu item	Description of a menu item in the software
Menu item > Menu item	Select menu items successively
Bold print	Description of terms that are used in the device software

2 Safety Instructions

To ensure reliable and safe long-term operation of your Draco tera please note the following guidelines:

Installation

- ➔ Only use the device according to this User Manual. Otherwise the provided safety can be affected.
- ➔ Only use in dry, indoor environments.
- ➔ The Draco tera and the power supply units can get warm. Do not situate them in an enclosed space without any airflow.
- ➔ Do not obscure ventilation holes.
- ➔ Only use power supplies originally supplied with the product or manufacturer-approved replacements. Do not use a power supply if it appears to be defective or has a damaged chassis.
- ➔ Connect all power supplies to grounded outlets. In each case, ensure that the ground connection is maintained from the outlet socket through to the power supply's AC power input.
- ➔ Do not connect the link interface to any other equipment, particularly network or telecommunications equipment.
- ➔ Only connect devices to the serial interface that are sufficiently secured against short circuit currents and false voltages at the serial interface.
- ➔ Take any required ESD precautions.

Repair

- ➔ Do not attempt to open or repair a power supply unit.
- ➔ Do not attempt to open or repair the Draco tera. There are no user serviceable parts inside.
- ➔ Please contact your dealer or manufacturer if there is a fault.

3 Description

3.1 Application

The Draco tera matrix is used to establish connections from consoles (monitor, keyboard, mouse, and other peripheral devices) to various sources (computer, CPU).

In a maximum configuration, up to 288 independent ports can be defined and switched either as a console or a CPU.

The Draco tera matrix is mainly specified for the use with extenders that are able to transmit video, KVM and USB 2.0 signals. But it can be also run as a video matrix.

The connection between the matrix and the peripheral devices, such as KVM extenders or video sources, can be made by Cat X, fiber or coaxial cables.

The matrix serves as a repeater. Thus, the matrix can be run at a maximum distance of 10 km from the consoles and 10 km from the sources.

3.2 Access Options

You have the following options to access the Draco tera for configuration and operation:

Access Option	Symbol
OSD	
Java tool	
Serial interface	

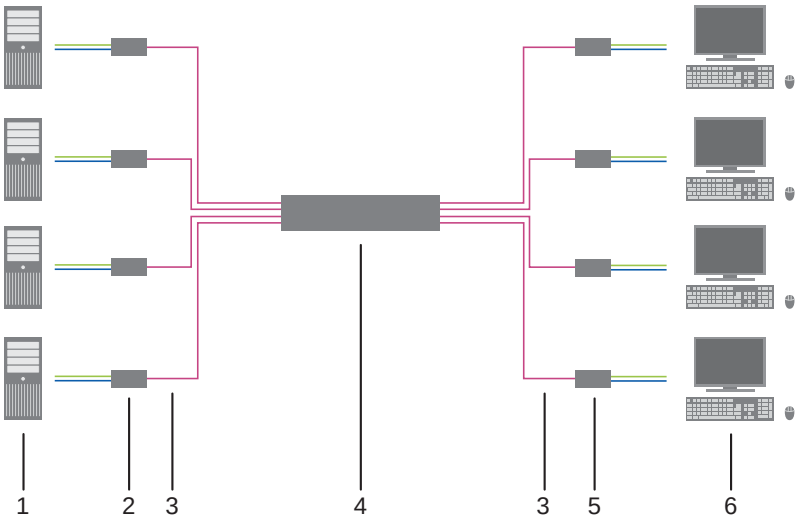
3.3 System Overview

A Draco tera matrix system consists of a Draco tera matrix and, for KVM applications, of one or more CPU Units / CON Units. The Draco tera matrix is connected to the CPU Units / CON Units by interconnect cables or connected directly to the video devices where used as a video matrix.

The CPU units are connected directly to the sources (computer, CPU) by the provided cables.

Monitor(s), keyboard and mouse are connected to the CON units.

The communication between the Draco tera matrix and the CPU Units / CON Units takes place over the respective interconnect cables.



System Overview (exemplary)

1 Source (computer, CPU)
2 CPU Units
3 Interconnect cable
4 Draco tera matrix
5 CON Units
6 Console (monitor, keyboard, mouse)

See Chapter 4.3, Page 34 for installation examples.

3.4 Product Range

Part No.	Description
K480-288	Draco tera matrix with 288 ports, empty, free configuration
K480-160	Draco tera matrix with 160 ports, empty, free configuration
K480-080	Draco tera matrix with 80 ports, empty, free configuration
K480-048	Draco tera matrix with 48 ports, empty, free configuration
K480-008	Draco tera matrix with 8 ports, empty, free configuration

3.5 Accessories

Part No.	Description
480-C8	Draco tera Cat X I/O board
480-M8	Draco tera fiber I/O board, Multi-mode
480-S8	Draco tera fiber I/O board, Single-mode
480-SDI16	Draco tera I/O board video
480-X8	Draco tera fiber I/O board, empty, free configuration
480-CTRL	Draco tera CPU board
459-1C	Cat X GBIC for the use with Draco tera
459-1M	Multi-mode GBIC for the use with Draco minor / major / tera
459-1S	Single-mode GBIC for the use with Draco minor / major / tera
480-3M	Multi-mode GBIC for the use with Draco tera (3.125 Gbit/s)
480-3S	Single-mode GBIC for the use with Draco tera (3.125 Gbit/s)
480-TSHD	Single-mode GBIC (transmitter), dual-unidirectional, for the use with Draco tera (HD-SDI)
480-TS3G	Single-mode GBIC (transmitter), dual-unidirectional, for the use with Draco tera (3G-SDI)
480-TBHD	Koax GBIC (transmitter), dual-unidirectional, for the use with Draco tera (HD-SDI)

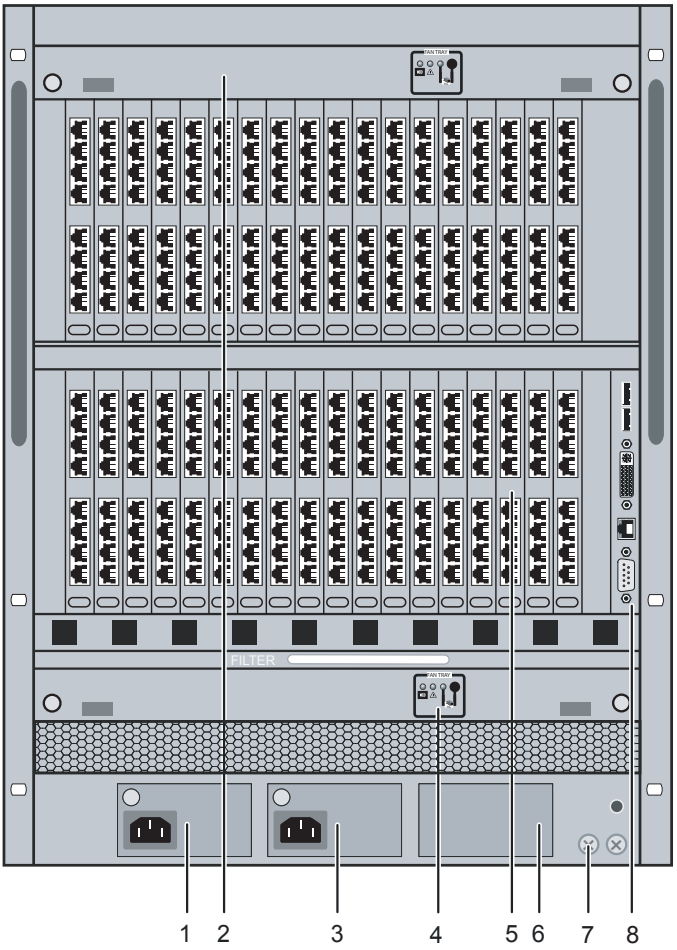
Part No.	Description
480-TB3G	Koax GBIC (transmitter), dual-unidirectional, for the use with Draco tera (3G-SDI)
480-RSHD	Single-mode GBIC (receiver), dual-unidirectional, for the use with Draco tera (HD-SDI)
480-RS3G	Single-mode GBIC (receiver), dual-unidirectional, for the use with Draco tera (3G-SDI)
480-RBHD	Koax GBIC (receiver), dual-unidirectional, for the use with Draco tera (HD-SDI)
480-RB3G	Koax GBIC (receiver), dual-unidirectional, for the use with Draco tera (3G-SDI)
480-FAN160	Draco tera 288/160 fan tray (spare part)
480-FAN80	Draco tera 80 fan tray (spare part)
480-FAN48	Draco tera 48 fan tray (spare part)
480-RED160	Draco tera 160 plug-in power supply unit (spare part or redundancy)
480-RED80	Draco tera 80 plug-in power supply unit (spare part or redundancy)
480-RED48	Draco tera 48 plug-in power supply unit (spare part or redundancy)
480-RED288	Draco tera 288 plug-in power supply unit (spare part or redundancy)
480-SLTR160	Draco tera 160 filter pads as consumable supply
480-SLTR80	Draco tera 80 filter pads as consumable supply
480-SLTR48	Draco tera 48 filter pads as consumable supply

You can find appropriate extenders or other components in Chapter 7.3, Page 117.

3.6 Device Views

The following views of the Draco tera matrix illustrate the various available chassis types.

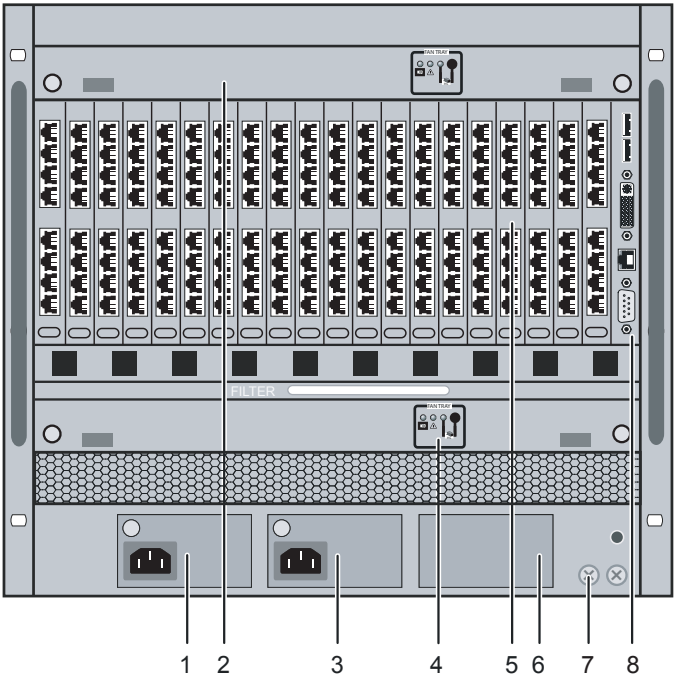
3.6.1 Draco tera 288 Port



Front View

1 Slot for power supply unit 1
2 Slot for fan tray 1
3 Slot for power supply unit 2
4 Slot for fan tray 2
5 Slot for I/O boards #1–36
6 Slot for power supply unit 3
7 Slot for CPU board
8 Grounding

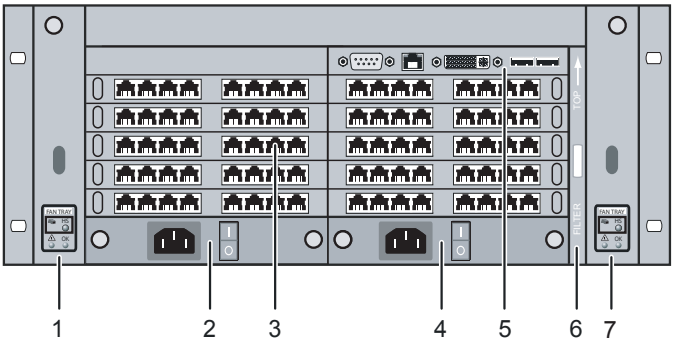
3.6.2 Draco tera 160 Port



Front View

1 Slot for power supply unit 1
2 Slot for fan tray 1
3 Slot for power supply unit 2
4 Slot for fan tray 2
5 Slot for I/O boards #1–20
6 Slot for power supply unit 3
7 Slot for CPU board
8 Grounding

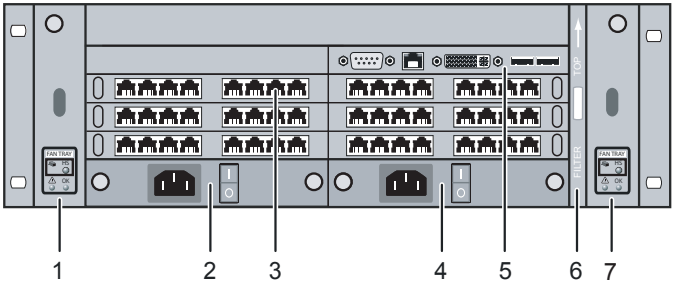
3.6.3 Draco tera 80 Port



Front View

1 Slot for fan tray
2 Slot for power supply unit 1
3 Slot for I/O boards #1–10
4 Slot for power supply unit 2
5 Slot for CPU board
6 Slot for air filter
7 Slot for fan tray 2

3.6.4 Draco tera 48 Port



Front View

1 Slot for fan tray

2 Slot for power supply unit 1

3 Slot for I/O boards #1–10

4 Slot for power supply unit 2

5 Slot for CPU board

6 Slot for air filter

7 Slot for fan tray 2

3.6.5 Draco tera 8 Port

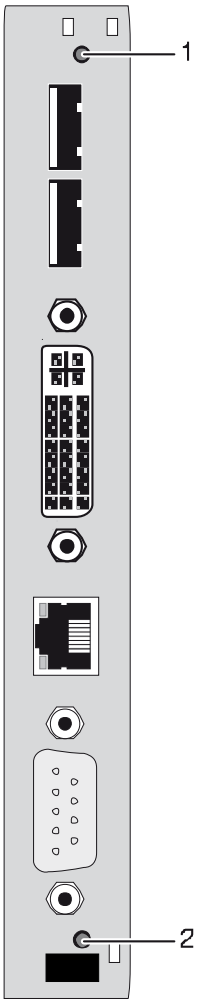
!Text/Bild kommt!

3.7 Diagnostics and Status

3.7.1 Status LEDs

The Draco tera components are fitted with the following LEDs for overall status indication:

CPU Board



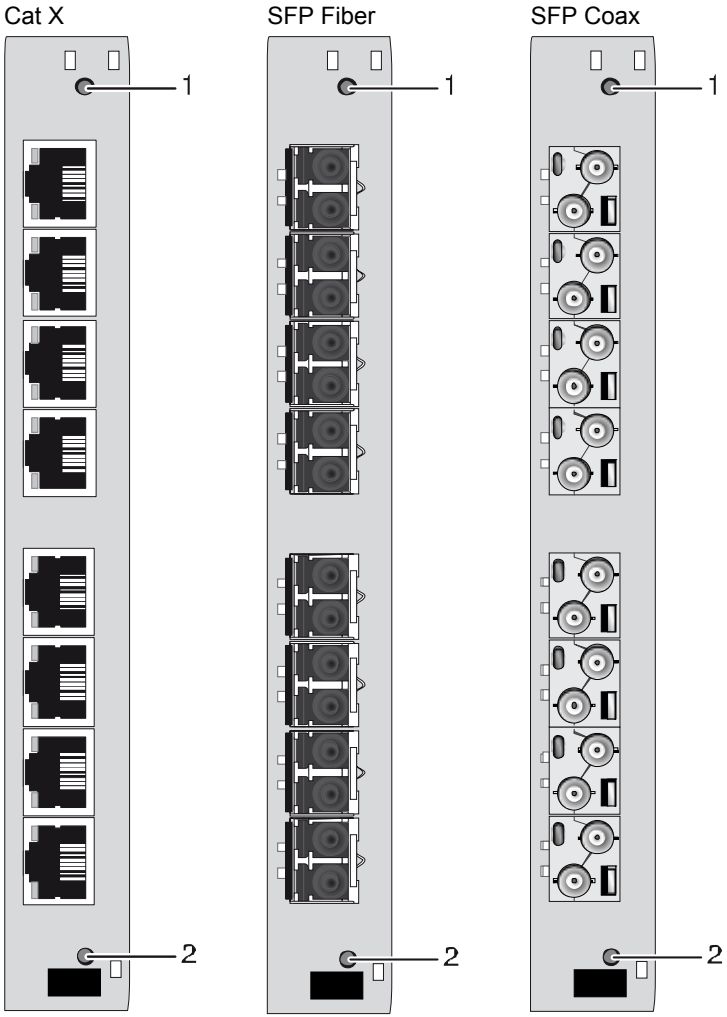
Front View

Status LEDs on CPU board:

Pos.	LED	Status	Description
1	**Status 1**	White	CPU board is in registration process
		Blue flashing	Registration at the matrix is started
		Red flashing	Registration in progress
		Green flashing	Operating condition
		Green	CPU board de-registered
2	**Status 2**	White	CPU board is in registration process
		Red flashing	Registration at the matrix is started
		Off	Operating condition

Due to variations in LED type "white" might also appear as light purple or light blue.

I/O Board



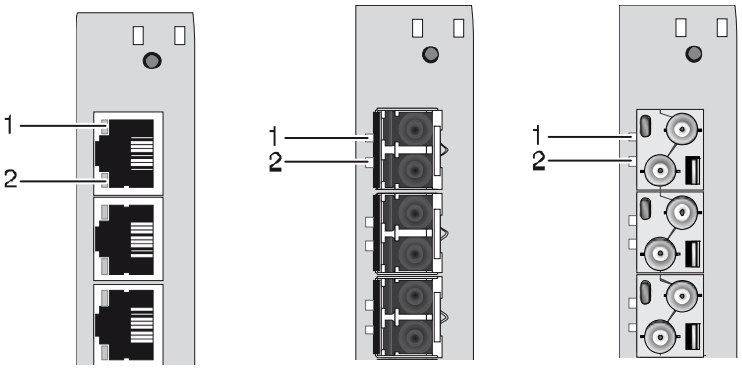
Front View

Status LEDs at I/O boards:

Pos.	LED	Status	Description
1	**Status 1**	Light blue	I/O board in boot process
		Red flashing	I/O board in registration process
		Green flashing	Operating condition, I/O board registered at the matrix
		Green	I/O board de-registered (locking pin pulled out)
2	**Status 2**	White	I/O board in boot process
		Blue	I/O board in registration process
		Blue flashing	Operating condition, communication active with CPU board active
		Red flashing	I/O board de-registered (locking pin pulled out)

Ports I/O Board

Cat X SFP Fiber SFP Coax



Front View

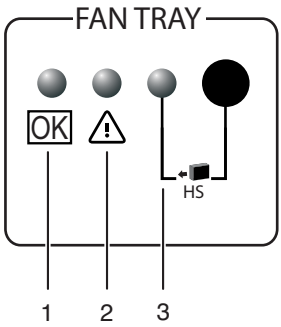
1 Status LED 1

2 Status LED 2

Status LEDs at the ports of the I/O boards:

Pos.	LED	Status	Description
1	**Link status** (green)	Off	Port not activated
		Flashing	Port activated, no connection via interconnect cable
		On	Connection via interconnect cable ok, data traffic active
2	**Link status** (orange)	Off	Port not activated
		Flashing	Port activated, no connection via interconnect cable
		On	Connection via interconnect cable ok, data traffic active

Fan Tray



Front View

1 Status LED 1

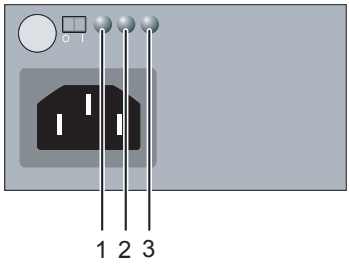
2 Status LED 1

3 Hot Swap LED

Status LEDs of the fan trays:

Pos.	LED	Status	Description
1	**Status 1** (green)	On	Operating condition
2	**Status 2** (blue)	Off	Operating condition
		On	Error indication
3	**Hot Swap** (blue)	Off	Hot Swap option deactivated
		On	Hot Swap option activated

Power Supply Unit Draco tera 288/160



Front View

Status LEDs of the power supply units

Pos.	LED	Status	Description
1	**AC Input OK** (green)	On	Operating condition
2	**DC Output OK** (green)	On	Operating condition
3	**O/T** (yellow)	Off	Normal temperature
		On	High temperature

Power Supply Unit Draco tera 80/48

Front View

Pos.	LED	Status	Description
1	**DC Input OK** (green)	On	Operating condition
		Off	No power supply

3.7.2 Port Status

The connections and the switching status between the various consoles and CPUs are shown in this menu.

You have the following possibilities to access the menu:

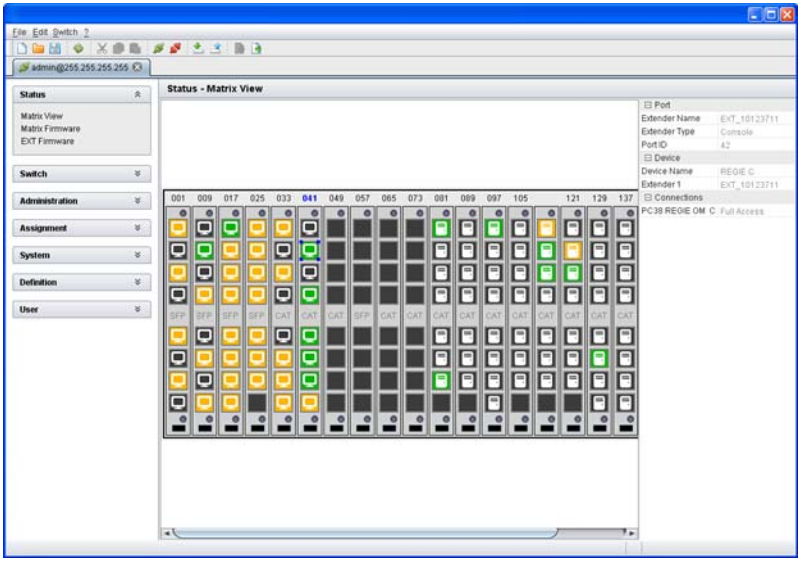
OSD

!Text kommt!

Java Tool

The current port configuration of the Draco tera is illustrated in this menu.

➔ Select **Status > Matrix View** in the task area in online mode.



*Menu **Status – Matrix View***

The colors indicates the connection status:

Color	Description
Black	Port not connected
Yellow	Video connection
Green	KVM connection

The symbol indicates the extender that is recognized and defined at a certain port:

Symbol	Description
	Port connected to a CPU unit
	Port connected to a CON unit
	Port connected to an USB 2.0 CPU unit
	Port connected to an USB 2.0 CON unit

- Red framed ports are defined as "fixed" (e. g. for USB 2.0 connections).
- The port with a static blue frame is currently selected.
- The ports with a flashing blue frame show the currently assigned connections.

➔ To show the extender information of the currently selected port in the right part of the working area, press the left mouse button.

The following information is available:

Field	Description
Extender Name	Name of the selected extenders
Extender Type	Type of the selected extender
Port ID	Number of the selected port
Device Name	Name of the connected console or CPU
Connections	Listing of assigned connections to the marked port (Full Access or Video Access)

➔ To open the context menu for the currently selected port with further functions, press the right mouse button.

The following context functions are available:

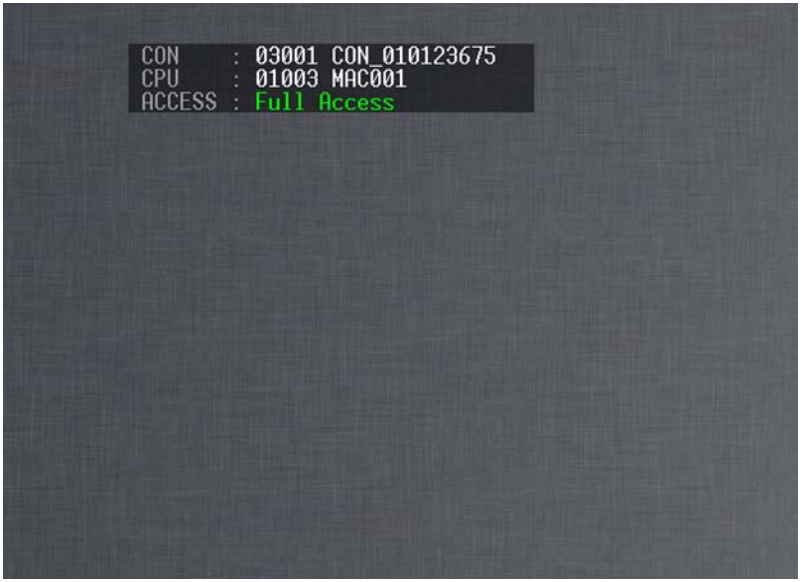
Function	Description
Open Extender	The menu for definition of the currently selected extender is opened
Open Device	The menu for definition of the currently selected console or CPU is opened
Switch	The menu for execution of switching operations is opened

To reload the **Matrix View** you have the following possibilities:

- Press the key <F5> of a connected keyboard
- Execute **Edit > Reload** in the menu bar
- Press the Button **Reload** in the tool bar

3.7.3 Extender OSD

All extenders used with the Draco tera are standardly provided with their own OSD to display the connection status of the own console.



*Example View **Extender OSD***

The following information is shown in the OSD menu:

Field	Description
CON	Name of the own console
CPU	Name of the currently connected CPU
Access	• **Full Access**: The own console has a KVM connection to the displayed CPU. • **Video Access**: The own console has a video only connection to the displayed CPU. • **not connected**: The own console is not connected to a CPU.

If the options **Mouse Connect** or **Keyboard Connect** (see Chapter 5.4.4, Page 67) are used, the name of the console with keyboard / mouse control will be displayed at those consoles that do not have K/M control at the moment. The console is displayed in yellow color under **Access**.

3.7.4 Network Status

The current network configuration is shown in this menu.

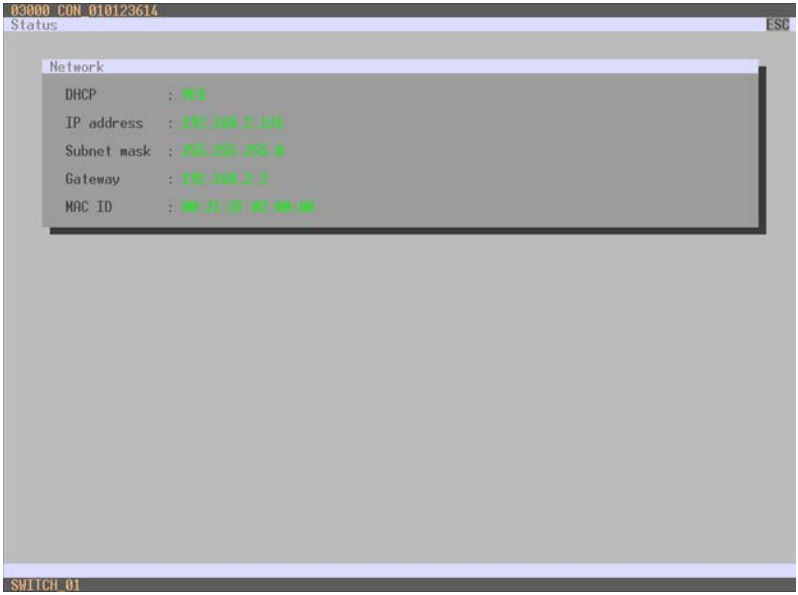
You have the following possibilities to access the menu:

The following information is shown in this menu:

Field	Description
DHCP	Information if the network settings are applied dynamically. Display **Y** (Yes) or **N** (No)
IP Address	Information about the IP address as provided manually or via DHCP
Subnet Mask	Information about the subnet mask as provided manually or via DHCP
Gateway	Information about the gateway address as provided manually or via DHCP
MAC ID	Information about the MAC address in the matrix

OSD

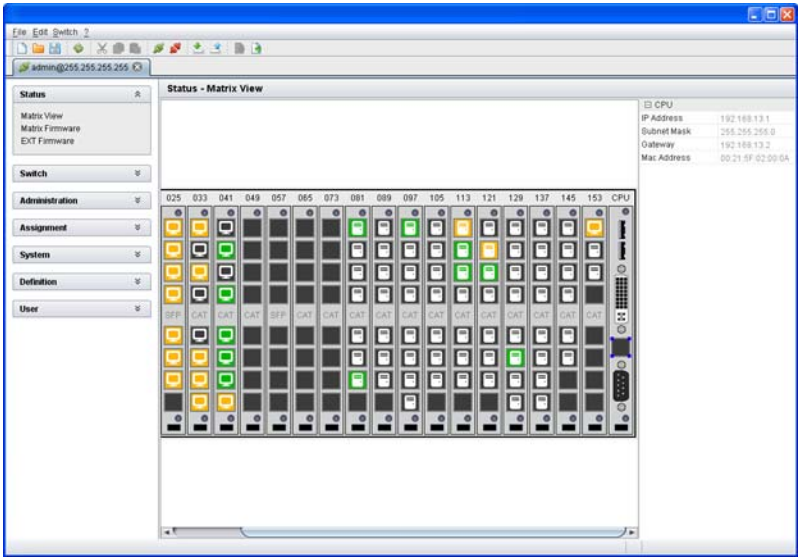
➔ Select **Status > Network** in the main menu.



*Menu **Status – Network***

Java Tool

1. Select **Status > Matrix View** in the task area.



*Menu **Status – Matrix View***

2. Use the left mouse button to click on the network port of the CPU board.

   The corresponding network status will be shown in the right part of the working area.

3.7.5 Firmware Status Matrix

The current firmware status of the installed boards is shown in this menu.

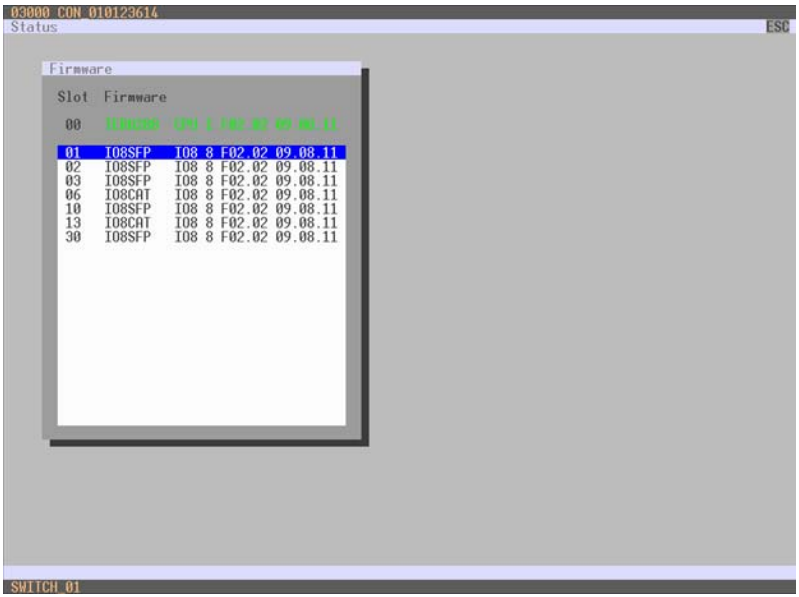
You have the following possibilities to access the menu:

The following information is shown in this menu:

Field	Description
Name	Description of the modules
Type	Type number
Ports	Number of ports
Version	Complete description of the firmware version
Date	Date of the firmware version
Status	Module status

OSD

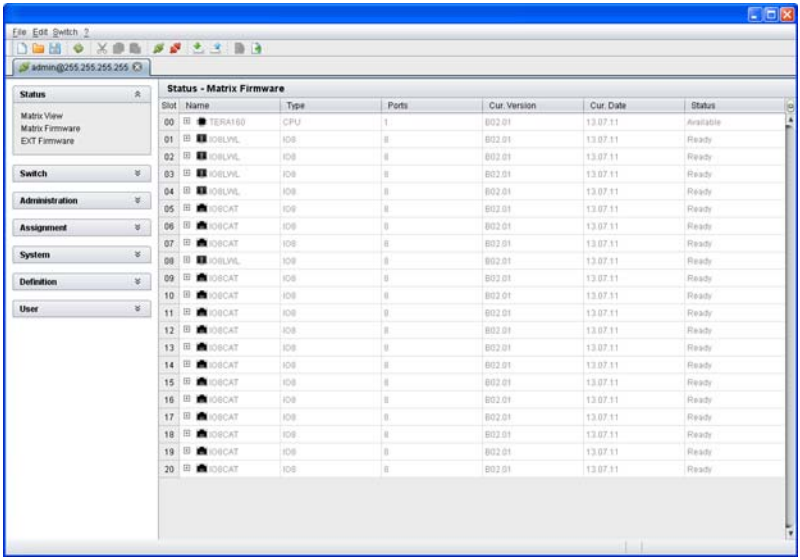
➔ Select **Status > Firmware** in the main menu.



*Menu **Status – Firmware***

Java Tool

1. Select **Status > Matrix Firmware** in the task area.



*Menu **Status – Matrix Firmware***

2. To read out the firmware status and store it locally (file extension **.dtf**), select **Switch > Save Firmware Status to File...**.
3. To read out the overall status of the matrix and store it locally (file extension **.zip**), select **Switch > Save Status to File...**.

The various modules can expanded and retracted in the column **Name** by clicking with the left mouse button on the plus or minus symbols to get a better overview.

By clicking on the plus resp. minus symbol in the upper right corner of the working area you can expand and retract all module information with one click at the left mouse button.

3.7.6 Firmware Status Extender

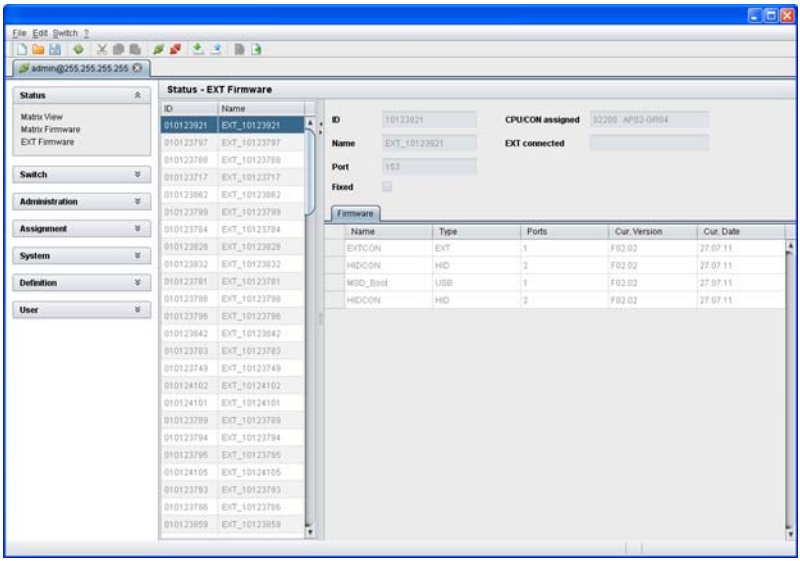
The current firmware status of the connected extenders is shown in this menu.

You have the following possibility to access the menu:

The following information is shown in this menu:

Field	Description
Name	Description of the firmware
Type	Description of the extender module
Ports	Number of ports
Cur. Version	Description of the current firmware version
Cur. Date	Date of the current firmware version

➔ Select **Status > EXT Firmware** in the task area.



*Menu **Status – EXT Firmware***

3.8 Trace Function

All events, e.g. activities and switching operations of the Draco tera matrix, are logged and displayed in this menu.

This function is used for diagnostic purposes.

You have the possibility to request various trace views in the menu:

The following information is shown in this menu:

Field	Description
Time	Timestamp
Message	Detailed description of the event

Trace possibilities

➔ Select **Status > Trace IO Board** in the main menu to check the events on your current I/O boards.

➔ Select **Status > Trace Matrix** to check the matrix events.

4 Installation

4.1 Package Contents

Your package contains the following items:

- Draco tera matrix
- 1x power cord per built-in power supply unit
- 1x serial control cable
- Mounting accessories
- User Manual
- Java Tool
- 1x Cat X network cable (cross-wired)

If anything is missing, contact your dealer.

4.2 System Setup

First time users are recommended to setup the system in the same room as a test setup. This will allow you to identify and solve any cabling problems, and experiment with your system more conveniently.

Setup of the matrix

1. Install the CPU and I/O boards.
2. Connect keyboard, mouse and monitor to the CPU board of the matrix.
3. Connect the matrix to the power supply.
4. Open OSD via 'Hot Key' and login with administrator rights in the main menu under **configuration** (see Chapter 5.2.1, Page 42).
5. Configure initially as requested.

After the configuration of the system it is recommended to save the configuration by selecting **Configuration > Save** and restart the matrix by selecting **Restart Matrix**.

6. Optional: Establish a network connection between the matrix and the Java tool in order to set an extended configuration (see Chapter 5.2.2, Page 47).

Setup of Extender

1. Connect the CON units to the matrix by using the interconnect cables (Cat X or fiber).
2. Connect the CON units to the input devices that has to be used (for example keyboard and mouse).
3. Connect the 5VDC power supply units to the CON units.
4. Check the basic function of the CON unit by opening the OSD via 'Hot Key'.
5. Connect the source (computer, CPU) to the CPU unit of the extender by using the provided connection cables.
6. Connect the CPU unit to the matrix by using the provided interconnect cables (Cat X or fiber).
7. If you have a video matrix, connect the video source directly to the matrix by using the interconnect cables (coax, fiber).
8. Connect the 5VDC power supply units to the CPU units.
9. Start the system.

4.3 Example Applications

The Draco tera supports a most flexible configuration of your system environment:

A part of the Draco tera can be configured as a Single-Head work station, a part as Dual-Head, as Quad-Head or even as a video matrix for example. In addition to that there are configurations with KVM and USB 2.0 available.

Among the access via OSD by the keyboard connected to the CPU board or an extender CON unit, you have the following additional access options:

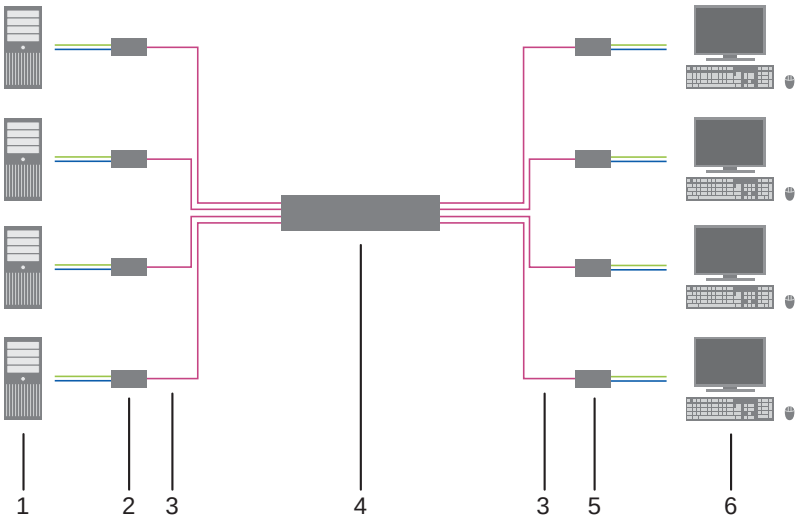
- via Java Tool
- via serial interface

A connection to common media controls is possible, too.

The following part shows typical exemplary installations of the Draco tera:

4.3.1 KVM Matrix

In Single-Head mode, up to 288 ports can be used either as an input or as an output port depending on components and equipment. At the same time there is a non blocking access for all users, i.e. user access is not limited by the activities of another user.



Single-Head KVM Matrix

1 Source (computer, CPU)

2 CPU unit

3 Interconnect cable

4 Draco tera matrix

5 CON unit

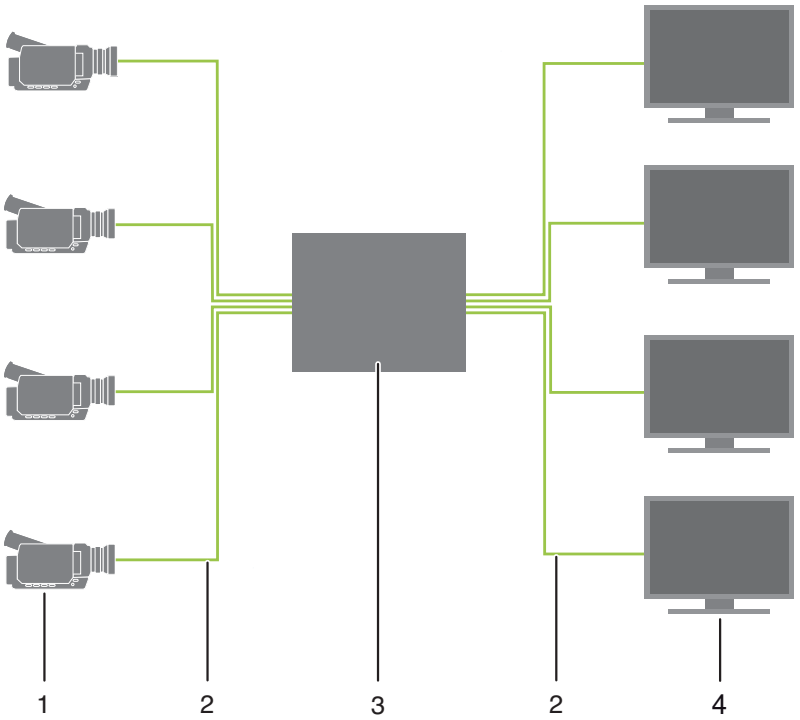
6 Console (monitor, keyboard, mouse)

If you have a Single-Head console, you can also get access to a Dual-Head or Quad-Head console for example. However control is only possible at monitor 1.

Any signal source can be switched to any number of monitors that will show the video signal at the same time. In addition to that even (optional) audio can be switched.

4.3.2 Video Matrix

If you use the Draco tera as a video matrix, up to 288 input ports can be switched to up to 288 output ports depending on components and equipment.



Video Matrix

1 Video source (e. g. SDI camera)

2 Interconnect cable

3 Draco tera matrix

4 Video sink (e. g. monitor)

4.3.3 Video Editing

!Text kommt!

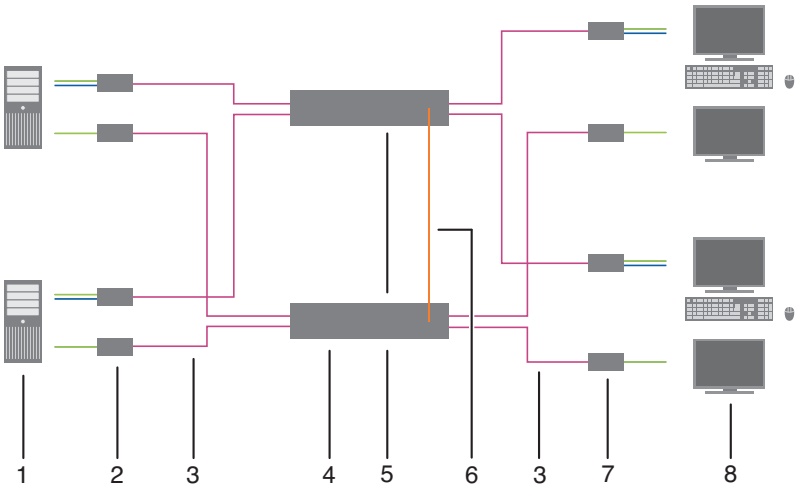
4.3.4 Parallel Operation (Stacking)

If you have special configurations, especially at installations with several monitors per work station or additional support of USB 2.0 transmission paths, the number of connectable CPUs and consoles can be increased by a parallel operation (stacking) of several Draco tera devices.

One of the Draco tera matrices has to be defined as the **master matrix**, all the others have to be configured as **slave matrix** and the IP address of the master matrix has to be entered in the field **Master IP Address** (see Chapter 5.4.1, Page 58). They have to be connected to the master matrix via network connector (RJ45) of the CPU board. The option **Enable LAN Echo** has to be activated at the master matrix (see Chapter 5.4.1, Page 58).

If a switching command is done in the OSD, the slave matrices will also switch automatically.

Switching of stacked devices might be delayed by several seconds.



Parallel Operation (Stacking)

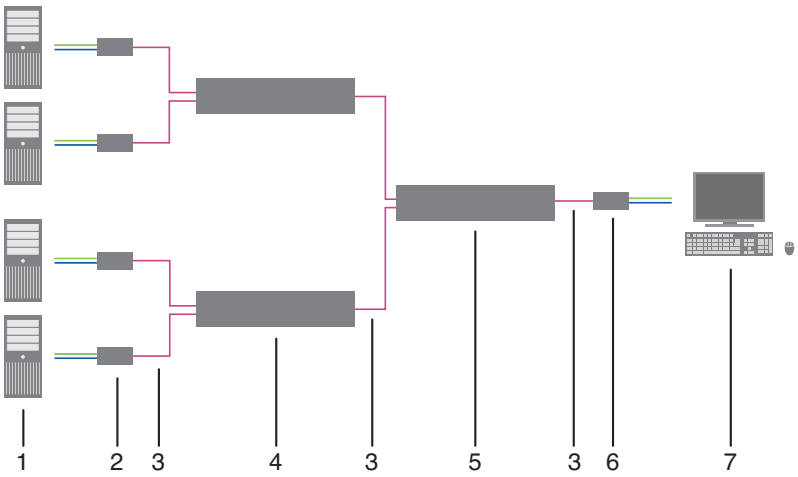
1 Dual-Head source (computer, CPU)
2 CPU unit
3 Interconnect cable
4 Draco tera matrix (master matrix)
5 Draco tera matrix (slave matrix)
6 Network connection master / slave(s)
7 CON unit
8 Console (2x monitor, keyboard, mouse)

4.3.5 Cascading

For applications exceeding the number of available ports, the system can be extended by cascading.

In this case, the Draco tera devices are connected by so-called "tie lines". The tie lines are dynamically configured to support connections in both directions.

To access cascaded matrices from a console, one of the matrices has to be configured as **sub matrix** (see Chapter 6.1.3, Page 106).



Cascading

1 Source (computer, CPU)
2 CPU unit
3 Interconnect cable
4 Draco tera (sub matrix)
5 Draco tera (main matrix)
6 CON unit
7 Console (monitor, keyboard, mouse)

5 Configuration

5.1 Command Mode

The Draco tera has a Command Mode that allows several functions via keyboard command during normal use.

To enter Command Mode use a 'Hot Key' sequence and to exit Command Mode, press <Esc>. While in Command Mode, the LEDs **Shift** and **Scroll** on the console keyboard will flash.

In Command Mode normal keyboard and mouse operation will cease. Only selected keyboard commands are available.

The following table lists the keyboard commands to enter and to exit Command Mode and to change the 'Hot Key' sequence:

Function	Keyboard Command
Enter Command Mode (default)	2x <Right Shift> (or 'Hot Key')
Exit Command Mode	<Esc>
Change 'Hot Key' sequence	<current 'Hot Key'> + <c>, <new 'Hot Key' code>, <Enter> Until 2011-30-09: <Left Ctrl> + <Left Shift> + <c>, <'Hot Key' Code>, <Enter>

<Key> + <Key>	Press keys simultaneously
<Key>, <Key>	Press keys successively
2x <Key>	Press key quickly, twice in a row (similar to a mouse double-click)

The 'Hot Key' sequence to enter Command Mode can be changed. The following table lists the 'Hot Key' Codes for the available key sequences:

'Hot Key' Code	'Hot Key'
1	<Left Ctrl> + <Left Shift> + <i>
2	2x <Scroll>
3	2x <Left Shift>
4	2x <Left Ctrl>
5	2x <Left Alt>
6	2x <Right Shift>
7	2x <Right Ctrl>
8	2x <Right Alt>

In a combined KVM matrix / U-Switch configuration, choose different 'Hot Keys' for the KVM matrix and the U-Switch.

5.2 Control Options

The Draco tera contains an internal CPU that allows you to control all functions from any console without the need for an external CPU or media control.

You have the following possibilities to access the Draco tera for configuration and operation:

- via OSD
- via Java Tool
- via serial interface

5.2.1 Control via OSD

Via OSD (On-Screen-Display) you set the configuration of the Draco tera operating system. The settings of the menu **Configuration** are described below. All other menus are described in later chapters.

You have the following possibilities to enter the OSD of the Draco tera:

- via keyboard connected to the CPU board
- via keyboard connected to a CON unit of an extender

Entering OSD

1. Start Command Mode with the 'Hot Key' (see Chapter 5.1, Page 40).
2. Press <o> to open OSD.

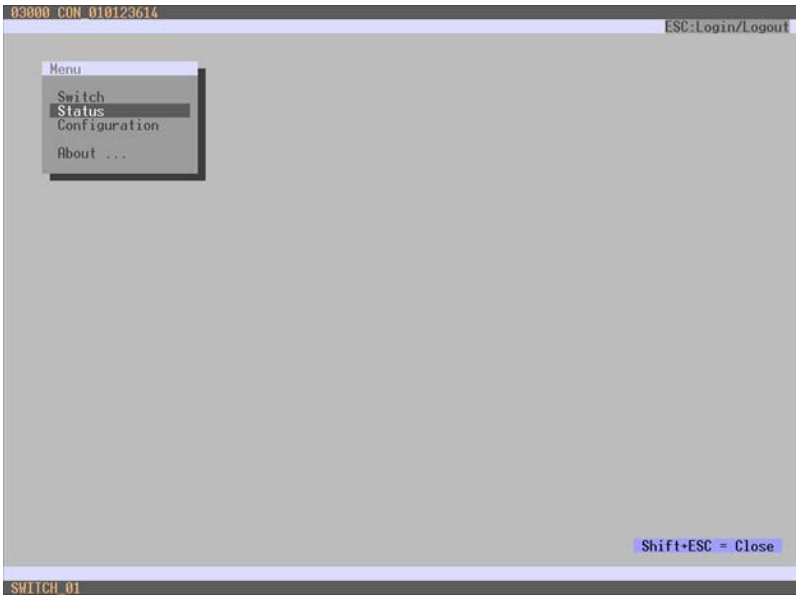
   You will see a list of all available CPUs as a start menu.
3. Press <Esc> to enter the main menu.

Leaving OSD

➔ Press <Shift> + <Esc> simultaneously.

The OSD will be closed without any further changes and the currently active CPU connection will be displayed.

Menu Structure



Example View

The general layout of the OSD is structured into three areas:

- Upper status area (topmost two text lines)
- Working area
- Lower status area (lowest two text lines)

Keyboard control

You can select between the following keyboard commands:

Function	Keyboard Command
Left cursor - only within an input field or a switching screen	<Cursor Left>
Right Cursor - only within an input field or a switching screen	<Cursor Right>
• In input fields: Line up (with wrap around) • In menus: Line up (without wrap around)	<Cursor Up>

Function	Keyboard Command
• In input fields: Line down (with wrap around) • In menus: Line down (without wrap around)	<Cursor Down>
Previous page in menus with more than one page	<Page Up>
Next page in menus with more than one page	<Page Down>
Next input field	<Tab>
Previous input field	<Left Shift> + <Tab>
Next option in selection fields	<+>
Previous option in selection fields	<->
Switching in selection fields between two conditions, e. g. between **ON** / **OFF** or **Y** (Yes) / **N** (No)	<Space>
• In menus with input fields: Save data • In menus: Select menu item	<Enter>
• In menus with input fields: Cancel data input without saving • In menus with selection fields: Go back to the superior menu	<Esc>

Sorting Function

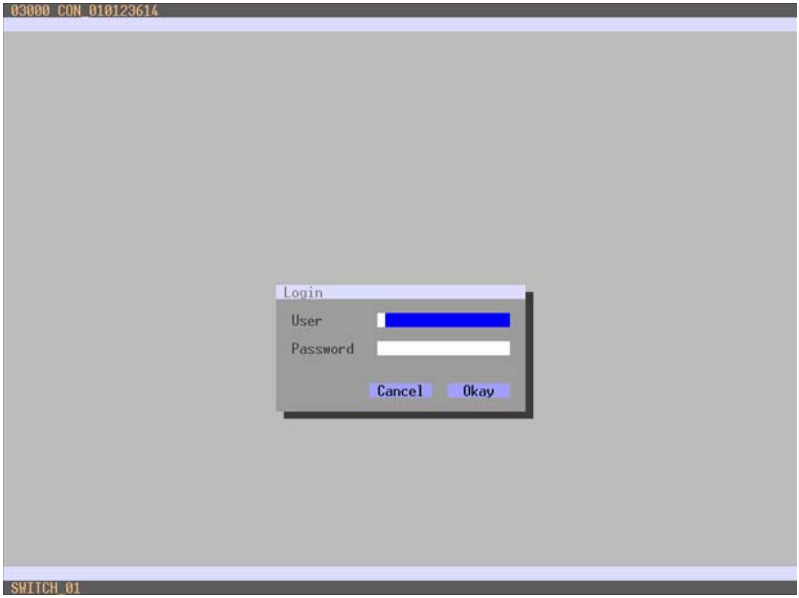
Lists and tables in the Java Tool offer a sorting function for fast and smooth search.

You have the possibility to use the following sorting functions:

Function	Keyboard Command
Sort ID numbers in a descending order or in an ascending order by pressing the keyboard command twice (**ID**).	<F1>
Sort ID names in a descending order or in an ascending order by pressing the keyboard command twice (**Name**).	<F2>
Go to the next result in the list of results of the search field (**Next**).	<F3>
Go to the previous result in the list of results of the search field (**Previous**).	<F4>
Refresh the currently shown list (**Refresh**).	<F5>
Jump between the search field and the list of results (**Find**).	<F6>

Password request

You have to login with administrator rights to be able to set configurations.



*Menu **Login***

Access to the configuration menu requires administrator rights. User login is mandatory.

Field	Input
User	admin
Password	admin

For security reasons. please change the administrator password as soon as possible (see Chapter 5.4.1, Page 58).

5.2.2 Control via Java Tool

Requirements

If you want to use the Java Tool, the following requirements have to be fulfilled:

- Computer with an executable Java Tool and an installed Java Runtime Environment (JRE, version 1.6 or higher)
- Java Tool software
- Available network connection between the Java Tool and the matrix

Contact your system administrator concerning JRE and network connection.

Installation of the Java Tool

The Java Tool is available as a single executable program file that does not require a separate installation.

➔ Copy the tool after receiving the file to a directory on your computer.

If you do not have a Java Tool, contact your dealer.

Computer Connection to the Matrix

For a direct connection between computer and matrix, a cross-wired network cable is required.
For a connection between computer and matrix via switch or hub, a parallel assembled network cable is required.

➔ Connect the network cable to the RJ45 ports of computer and CPU board of the matrix.

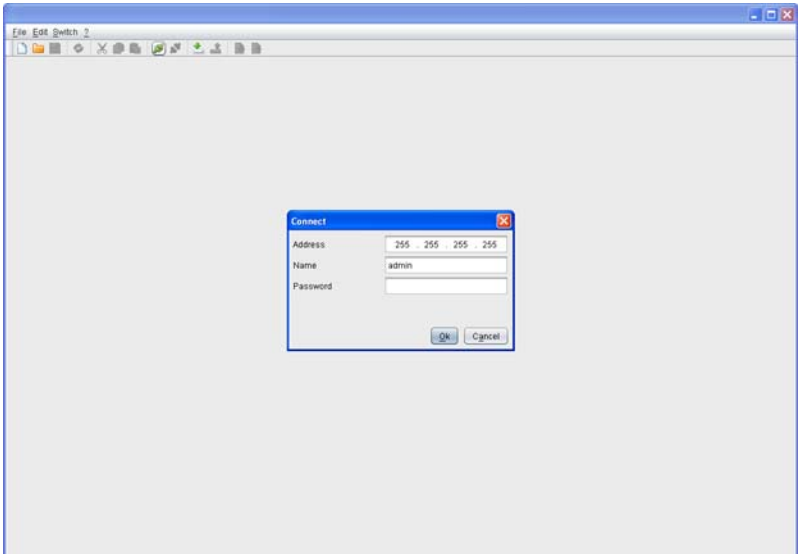
Start of the Java Tool

➔ Open the Java Tool by a double click on the program icon or use the <Enter> key of the keyboard.

Connection to the Matrix

Administrator rights are required.

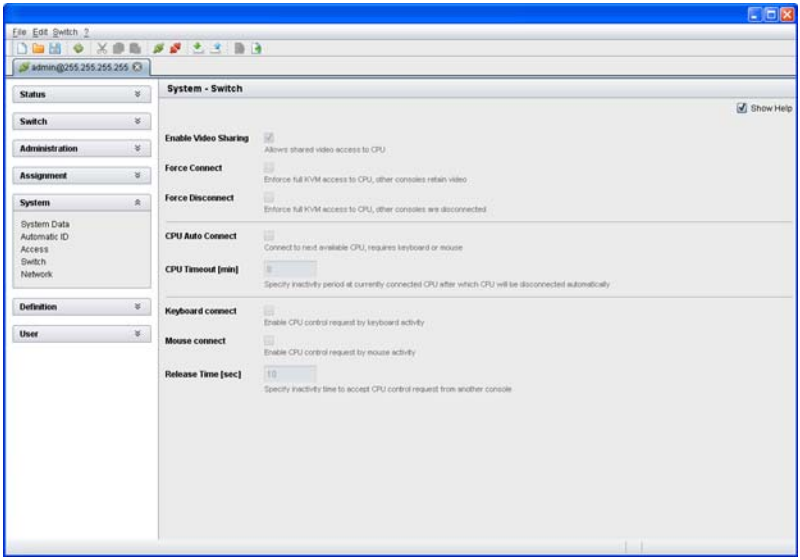
1. Open the Java Tool.
2. Select **Switch > Connect** in the menu bar.
3. Enter the IP address in the popup input field according to the network configuration of the Draco tera (see Chapter 5.2.3, Page 54).
4. Enter the user name and password for the Draco tera (see Chapter 5.4.1, Page 58).
5. Confirm your inputs with the button **OK** or reject with **Cancel**.



*Menu **Connect***

Up to eight connections between the matrix and the Java tool can be established at the same time due to a limitation of available sockets.

Menu structure



*Example View (**System – Switch**)*

The menu structure of the Java Tools is subdivided into various sections:

- Menu bar (top line)
- Toolbar (second line)
- Tab bar (third line)
- Task area (left menu section)
- Working area (right menu section)
- Status bar (bottom line section)

Operating Instructions

The operation of the Java Tool is intuitive and corresponds to the user interface of common operating systems.

The Java Tool contains its own support function.

The manual of the Draco tera only describes how to find and open the appropriate menus in the Java Tool. For further operation use the support function of the tool.

The integrated help texts in the working area of the Java Tool can be activated or deactivated by the checkbox in the upper right corner.

Mouse Control

You can select between the following mouse commands:

Function	Mouse Command
Menu selection, marking	Left mouse button
Open function specific selection menus	Double click left mouse button
Open context specific selection menus	Right mouse button

Keyboard Control

You can select between the following keyboard commands:

Function	Keyboard Command
Cursor to the left	<Cursor Left>
Cursor to the right	<Cursor Right>
Line up	<Cursor Up>
Line down	<Cursor Down>
Previous page in input or status menus with more than one page	<Page Up>
Next page in input or status menus with more than one page	<Page Down>
Next field in input menus	<Tab>
Previous field in input menus	<Left Shift> + <Tab>
• Switching in selection fields between two conditions (checkmark or not). • Open already marked fields with editing or selecting possibility.	<Space>
• In menus: Data saving • Menu item selection	<Enter>
• Leave tables • Jump from tables into the next field	<Ctrl> + <Tab>
• Leave tables • Jump from tables into the previous field	<Ctrl> + <Left Shift> + <Tab>

Various functions within the menus in the menu bar can be executed with the provided keyboard commands (e. g. press <Ctrl> + <S> to execute **Save**) that are listed to the right of the respective menu item.

Reload Options

The information shown in the Java Tool can be reloaded in different ways.

- Via <F5> key on the used keyboard
- Via **Edit > Reload** in the menu bar
- Via "Reload"-Symbol in the symbol bar

Context Function

The Java Tool offers several context functions that support a user friendly and effective operation of the tool. The context functions are described in the respective chapters.

➔ To execute a context function, use the right mouse button on the corresponding field and select the desired function.

Sorting Function

Lists and tables in the Java Tool offer a sorting function for fast and smooth search.

1. For ascending sort status, use the left mouse button once to click into the header of the column to be sorted.

   The sort status is indicated by an arrow that points upwards.
2. For descending sort, use the left mouse button twice to click on the header of the column that has to be sorted. The sort is displayed by an arrow that points downwards.
3. To cancel the sort, use the left mouse button once or twice to click on the header of the column that is sorted until the displayed arrow will disappear.

Filter Function

Lists and tables in the Java Tool offer a filter function that allows a fast and smooth search inside.

1. To activate a filter, use the right mouse button to click on the header of the column that has to be filtered and select **Set Filter**.
2. Write directly the word or part of a word that has to be filtered into the header.

   The filter results are shown immediately.
3. To delete a filter, use the right mouse button to click on the header of the column that has to be filtered and select **Clear Filter**.

An active filter is indicated by an asterix in the header.
The filter function is based on the functional principle of common web search engines.

Configuration in the Java Tool

Configuration and system settings via Java Tool can only be changed in offline mode without a direct connection between matrix and Java Tool.

To activate a configuration in the matrix, please proceed as follows:

1. Select **File > Upload** to in the menu bar.
2. Enter the IP address of the matrix (see Chapter 5.2.3, Page 54) and the name and password of the user authorization and select the storage location of the new configuration (**default** or **config01-08**) in the menu Select **Configuration**.
3. Select **Switch > Connect** in the menu bar and enter the IP address of the matrix and the name and password for user authorization.
4. Select **Administration > Activate Configuration** in the task area and select the storage location that has been selected above.
5. Use the button **Activate** to open the selected configuration within the matrix.

   The connection and the open tab will be closed and the matrix will be restarted.

During the activation of a configuration, the matrix is temporarily not available.

Configuration File

The Java tool is equipped with an additional configuration file (**defaults.cfg**) by default. This file allows the user to set various configuration parameters of the Java tool. The file can be opened and edited by standard text editor programs.

The following configuration parameters can be edited:

Parameter	Description
IP	Default IP address of the matrix required for connection
User	Default user name required for connection
sys.dir	Default directory for configuration files
upd.dir	Default directory for update files
dfw.dir	Default directory for the firmware status
impexp.dir	Default directory for import and export files

5.2.3 Control via Serial Interface

The Draco tera operating system offers various functions for an operation via serial interface (see Chapter 7.4, Page 120). There are telegrams for Switching single or all connections available, both unidirectional and bidirectional. In addition to that, there are telegrams for an overall definition of the total switching status and for saving and loading such switching states.

By request, the Draco tera optionally provides an echo of all effected switching operations via serial interface or network interface. That is why you have the possibility to track the current configurations of the matrix at any time and so update your own applications.

As an additional application you can switch parallely Draco tera clones as slaves (**Stacking**) via serial network interface.

5.3 Assignment

The Draco tera offers the possibility of a console specific or a CPU specific assignment.

- The first possibility is to assign virtual CPUs to real CPUs.
- The second possibility is to assign real consoles to virtual consoles.

5.3.1 Virtual CPU to real CPU

You can assign virtual to real CPUs in this menu.

With this function the effort for switching several consoles to the same CPU can be reduced. If there a several consoles connected to a virtual CPU that is assigned to a real CPU, you will only have to chance the real CPU once and all consoles will receive the video signal of the new CPU.

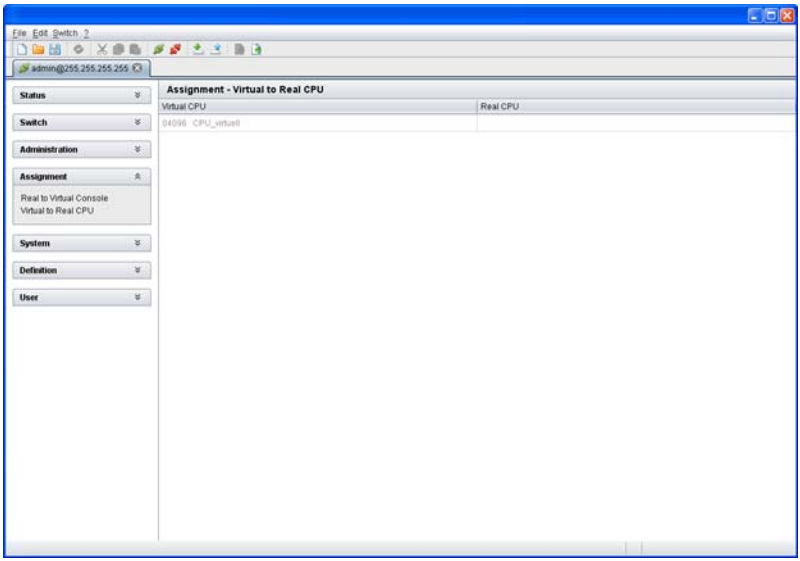
You have the following possibilities to access the menu:

OSD

Under development

Java Tool

➔ Select **Assignment > Virtual to Real CPU** in the task area.



*Menu **Assignment – Virtual to Real CPU***

For an assignment, proceed as follows:

1. Select a virtual CPU in the list **Virtual CPU**.
2. Double click in the column **Real CPU** to get a list of all available real CPUs.
3. Select a real CPU.

You can select between the following buttons:

Button	Function
Send	Send assignments to the matrix
Reload	Reload changes

By activating the function **Auto Send** in the left lower corner of the working area, switching operations will be done immediately without confirmation by pressing the button **Send**.

The selection boxes in the column **Real CPU** contain a filter function for an easy selection of single consoles from a larger pool of consoles (see Chapter 5.2.2, Page 47).

The Java tool additionally offers the possibility to go directly from the menu **Assignment** to the menu **Definition** to check specific settings for the respective console or CPU.

➔ Use the right mouse button to select the respective console or CPU and select **Open CON Device** or **Open CPU Device**.

5.3.2 Real Console to Virtual Console

You can assign real consoles to virtual consoles in this menu.

With this function the effort to set and change access permissions can be reduced by changing the permissions of the virtual console and so applying them to all assigned real consoles, too.

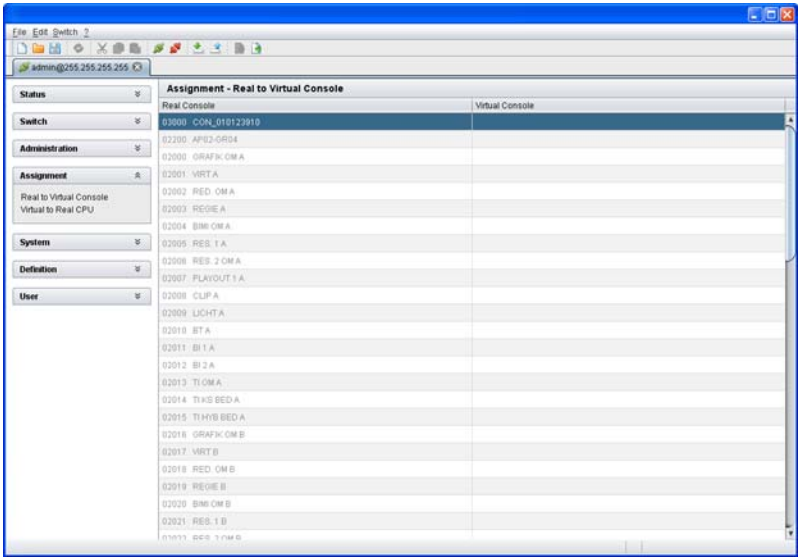
You have the following possibilities to access the menu:

OSD

Under development

Java Tool

➔ Select **Assignment > Real to Virtual Console** in the task area.



*Menu **Assignment – Real to Virtual Console***

To place an assignment, proceed as follows:

1. Select the required real console in the table **Real Console**.
2. Double click in the column **Virtual Console** to get a list of all available virtual consoles.
3. Select the required virtual console.

You can select between the following buttons:

Button	Function
Send	Send assignments to the matrix
Cancel	Reject changes

By activating the function **Auto Send** in the left lower corner of the working area, switching operations will be done immediately without confirmation by pressing the button **Send**.

The selection boxes in the column **Virtual Console** contain a filter function for an easy selection of single CPU from a larger pool of CPUs (see Chapter 5.2.2, Page 47).

5.4 System Settings

You have the possibility to configure the following system settings at the Draco tera.

The configuration of the system settings can only be set by users with administrator rights.

5.4.1 System Data

The system configuration is set in this menu.

You have the following possibilities to access the menu:

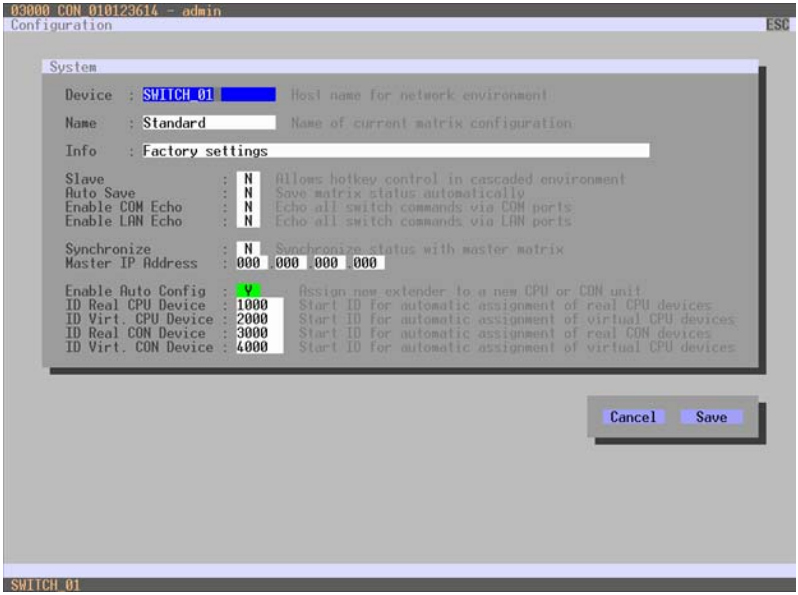
You can select between the following settings:

Field	Selection	Description
Device	Text	Enter the device name of the matrix (default: SWITCH_01)
Name	Text	Enter the name of the configuration that is used to save the current settings (default: Standard)
Info	Text	Additional text field to describe the configuration (default: Factory settings)
Sub Matrix	activated	If the matrix is defined as a sub matrix in the OSD, the user will loose control automatically. Control can be recovered by using the keyboard command <Shift>, <Shift>, <s>, <o>. The OSD now will be opened again in the matrix that has been defined as sub matrix.
	deactivated	Function not active (default)
Auto Save	activated	Save the current configuration of the matrix in the flash memory periodically.
	deactivated	Function not active (default)

Field	Selection	Description
Enable COM Echo	activated	Send all performed switching commands in the matrix as an echo via serial interface. **Note:** This function should be enabled when using a media control via serial interface.
	deactivated	Function not active (default)
Enable LAN Echo	activated	Send all performed switching commands in the matrix as an echo via LAN connection. **Note:** This function should be enabled when using a media control via LAN connection.
	deactivated	Function not active (default)
Slave Matrix	activated	Synchronize the slave matrix according to the switch status of the master matrix.
	deactivated	Function not active (default)
Master IP Address	Numerical value	Set the network address of the master matrix (default value: 000.000.000.000)

OSD

➔ Select **Configuration > System** in the main menu.

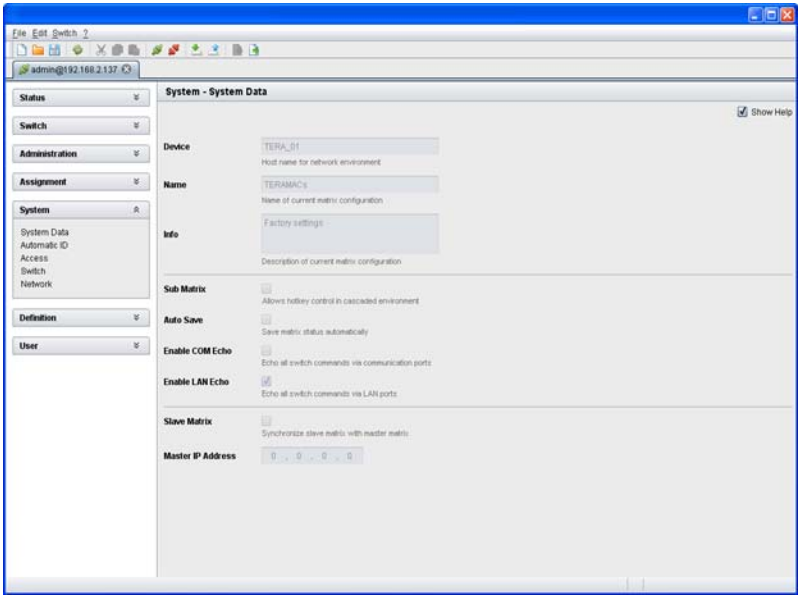

03000 CON 010123614 - admin
Configuration
ESC
System
Device : SWITCH_01
Host name for network environment
Name : Standard
Name of current matrix configuration
Info : Factory settings
Slave : N
Allows hotkey control in cascaded environment
Auto Save : N
Save matrix status automatically
Enable COM Echo : N
Echo all switch commands via COM ports
Enable LAN Echo : N
Echo all switch commands via LAN ports
Synchronize : N
Synchronize status with master matrix
Master IP Address : 000 000 000 000
Enable Auto Config : Y
Assign new extender to a new CPU or CON unit
ID Real CPU Device : 1000
Start ID for automatic assignment of real CPU devices
ID Virt. CPU Device : 2000
Start ID for automatic assignment of virtual CPU devices
ID Real CON Device : 3000
Start ID for automatic assignment of real CON devices
ID Virt. CON Device : 4000
Start ID for automatic assignment of virtual CPU devices
Cancel
Save
SWITCH_01

*Menu **Configuration – System***

You can select between the following buttons:

Button	Function
Cancel	Reject changes
Save	Save changes

Java Tool



*Menu **System – System Data***

5.4.2 Automatic ID

The settings for the automatic creation of CPU and CON devices by connecting a new extender unit are made in this menu.

You have the following possibilities to access the menu:

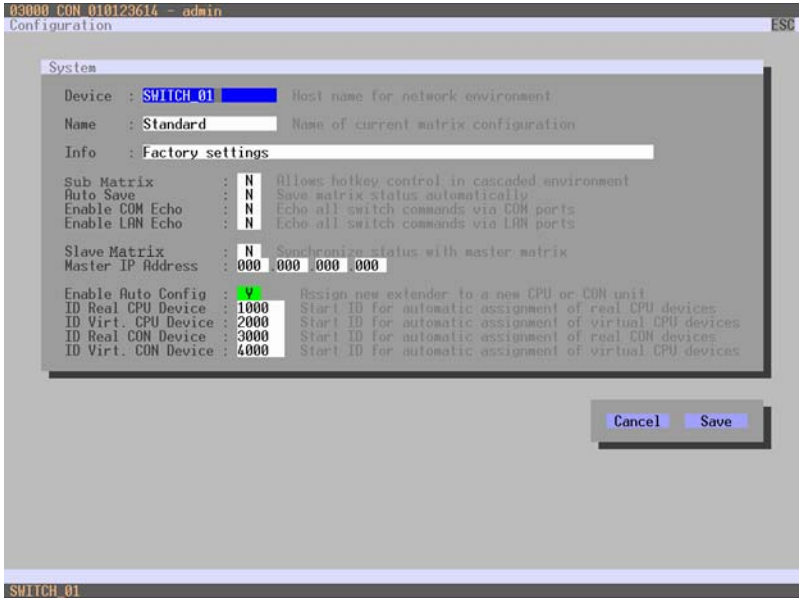
You can select between the following settings:

Field	Selection	Description
Enable Auto Config	activated	Automatic creation of a new CPU or CON device if new extender units are connected (default)
	deactivated	Function not active
ID Real CPU Device	Numerical value	Initial value of the automatic ID for real CPUs (default value: 1000)

Field	Selection	Description
ID Virtual CPU Device	Numerical value	Initial value of the automatic ID for virtual CPUs (default value: 2000)
ID Real CON Device	Numerical value	Initial value of the automatic ID for real CONs (default value: 3000)
ID Virtual CON Device	Numerical value	Initial value of the automatic ID for virtual CONs (default value: 4000)

OSD

➔ Select **Configuration > System** in the main menu.


03000 CON 010123614 - admin
Configuration
ESC
System
Device : SWITCH_01
Host name for network environment
Name : Standard
Name of current matrix configuration
Info : Factory settings
Sub Matrix : N
Auto Save : N
Enable COM Echo : N
Enable LAN Echo : N
Allows hotkey control in cascaded environment
Save matrix status automatically
Echo all switch commands via COM ports
Echo all switch commands via LAN ports
Slave Matrix : N
Master IP Address : 000 000 000 000
Synchronize status with master matrix
Enable Auto Config : Y
ID Real CPU Device : 1000
ID Virt. CPU Device : 2000
ID Real CON Device : 3000
ID Virt. CON Device : 4000
Assign new extender to a new CPU or CON unit
Start ID for automatic assignment of real CPU devices
Start ID for automatic assignment of virtual CPU devices
Start ID for automatic assignment of real CON devices
Start ID for automatic assignment of virtual CPU devices
Cancel
Save
SWITCH_01

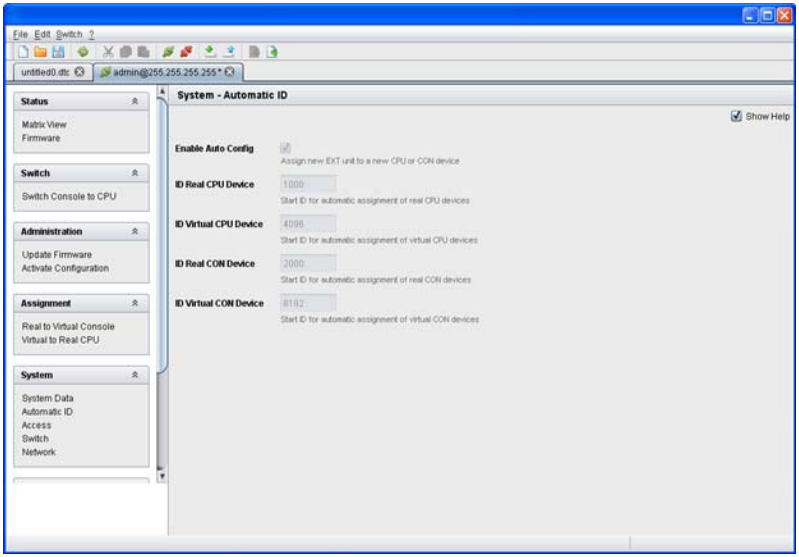
*Menu **Configuration – System***

You can select between the following buttons:

Button	Function
Cancel	Reject changes
Save	Save changes

Java Tool

➔ Select **System > Automatic ID** in the task area.



*Menu **System – Automatic ID***

5.4.3 Access

The access configuration is set in this menu.

You have the following possibilities to access the menu:

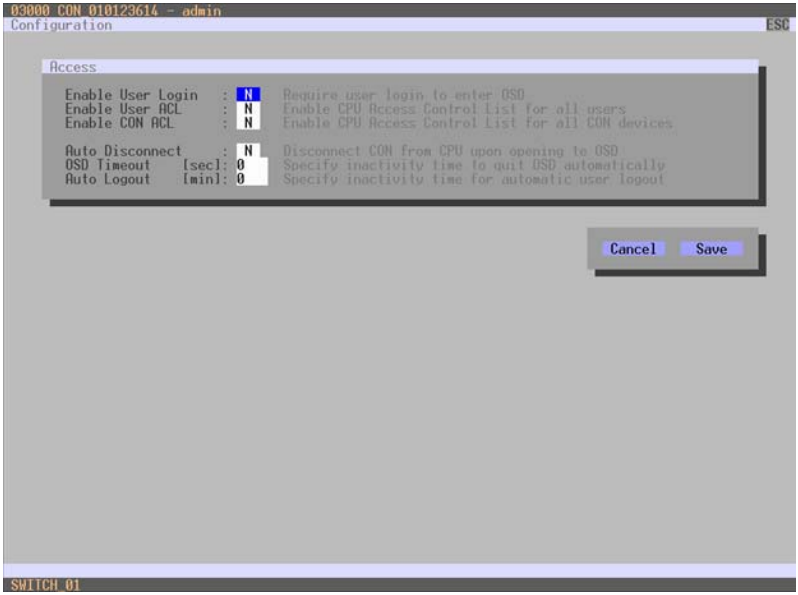
You can select between the following settings:

Field	Selection	Description
Enable User Login	activated	The user has to login with a user name and a password once to enter OSD. Thereafter the user remains logged in until he explicitly logs out or an auto logout is effected.
	deactivated	Function not active (default)

Field	Selection	Description
Enable User ACL	activated	CPU access is restricted according to the permissions in the ACL (Access Control List). • User login is required. • Switching by keyboard 'Hot Keys' requires a prior login.
	deactivated	Function not active (default)
Enable Console ACL	activated	CPU access is restricted according to the permissions in the respective Console ACL (Access Control List). No login required
	deactivated	Function not active (default)
Auto Disconnect	activated	Upon opening the OSD, the console will be automatically disconnected from the current CPU.
	deactivated	Function not active (default)
OSD Timeout	0-999 seconds	Period of inactivity after which OSD will be closed automatically. • Select 0 seconds, for no timeout (default: 0 seconds)
Auto Logout	0-999 minutes	Period of inactivity after which a user is automatically logged out from the OSD at this console. • The timer is not active as long as the OSD is open. • Select 0 minutes for an immediate logout.

OSD

➔ Select **Configuration > Access** in the main menu.


03000 CON 010123614 - admin
Configuration
ESC
Access
Enable User Login : N Require user login to enter OSD
Enable User ACL : N Enable CPU Access Control List for all users
Enable CON ACL : N Enable CPU Access Control List for all CON devices
Auto Disconnect : N Disconnect CON from CPU upon opening to OSD
OSD Timeout [sec]: 0 Specify inactivity time to quit OSD automatically
Auto Logout [min]: 0 Specify inactivity time for automatic user logout
Cancel
Save
SWITCH 01

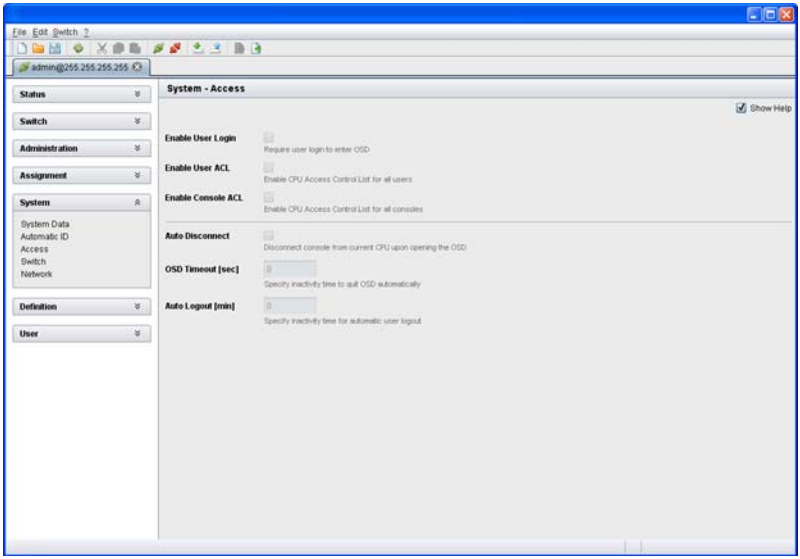
*Menu **Configuration – Access***

You can select between the following buttons:

Button	Function
Cancel	Reject changes
Save	Save changes

Java Tool

➔ Select **System > Access** in the task area.



*Menu **System – Access***

5.4.4 Switch

The configuration of the switching parameters is set in this menu.

You have the following possibilities to access the menu:

You can select between the following settings:

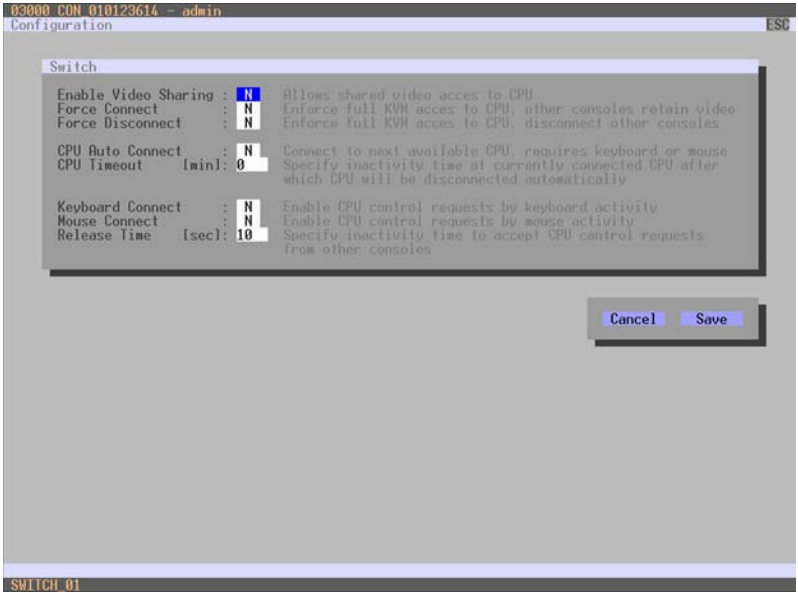
Field	Selection	Description
Video Sharing	activated	The user can switch to any CPU as an observer, even to such ones that are already assigned to another user (observer without keyboard/mouse access). • **Note:** Switching with the key <Space>, not <Enter>. • The operator will not be informed if further users connect as an observer to the CPU that is connected to his console.
	deactivated	Function not active (default)
Force Connect	activated	The user can connect to every single CPU as an operator, even to such ones that are related to another user. • **Note:** The previous user is set to video only status. • To share K/M control, **Force Connect** has to be activated.
	deactivated	Function not active (default)
Force Disconnect	activated	Extension of **Force Connect**: If the user connects to a CPU as an operator that is already related to another user, the connection to the previous user will be completely disconnected. **Note:** To share K/M control **Force Disconnect** has to be deactivated.
	deactivated	Function not active (default)

Field	Selection	Description
CPU Auto Connect	activated	If a console is not connected to a CPU, you can establish an automatic connection to the next available CPU by hitting any key or mouse button.
	deactivated	Function not active (default)
CPU Timeout	0 – 999 minutes	Period of inactivity after which a console will be automatically disconnected from its current CPU (default value: 0 minutes)
Keyboard Connect	activated	Activate request of K/M control by keyboard event (key will be lost)
	deactivated	Function not active (default)
Mouse Connect	activated	Activate request of K/M control by mouse event
	deactivated	Function not active (default)
Release Time	0-999 seconds	Period of inactivity of a connected console after which K/M control can be requested by other consoles connected to the CPU. • **Note:** Set "0" for an immediate transfer in real-time. • Only one console can have keyboard and mouse control at the same time. The other consoles that are connected to the same CPU have a video only status (default value: 10 seconds)

If the options **Keyboard Connect** and/or **Mouse Connect** are activated, the condition **Release Time** will have to be met until a new user will gain control.

OSD

➔ Select **Configuration > Switch** in the main menu.


03000 CON 010123614 - admin
Configuration
ESC
Switch
Enable Video Sharing : N
Force Connect : N
Force Disconnect : N
CPU Auto Connect : N
CPU Timeout [min]: 0
Keyboard Connect : N
Mouse Connect : N
Release Time [sec]: 10
Allows shared video acces to CPU
Enforce full KVM acces to CPU, other consoles retain video
Enforce full KVM acces to CPU, disconnect other consoles
Connect to next available CPU, requires keyboard or mouse
Specify inactivity time at currently connected CPU after which CPU will be disconnected automatically
Enable CPU control requests by keyboard activity
Enable CPU control requests by mouse activity
Specify inactivity time to accept CPU control requests from other consoles
Cancel
Save
SWITCH 01

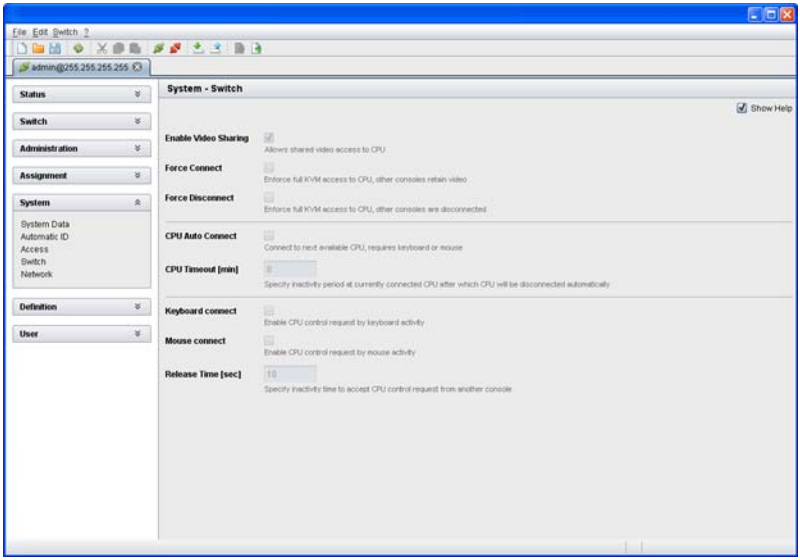
*Menu **Configuration – Switch***

You can select between the following buttons:

Button	Function
Cancel	Reject changes
Save	Save changes

Java Tool

➔ Select **System > Switch** in the task area.



*Menu **System – Switch***

5.4.5 Network

The network configuration is set in this menu.

You have the following possibilities to access the menu:

You can select between the following settings:

Field	Selection	Description
DHCP	activated	The network settings are automatically supplied by a DNS server (default)
	deactivated	Function not active
IP address	Byte	Input of the IP address in the form "192.168.1.1", if DHCP is not active
Subnet Mask	Byte	Input of the subnet mask in the form "255.255.255.0", if DHCP is not active (default: 255.255.255.0)

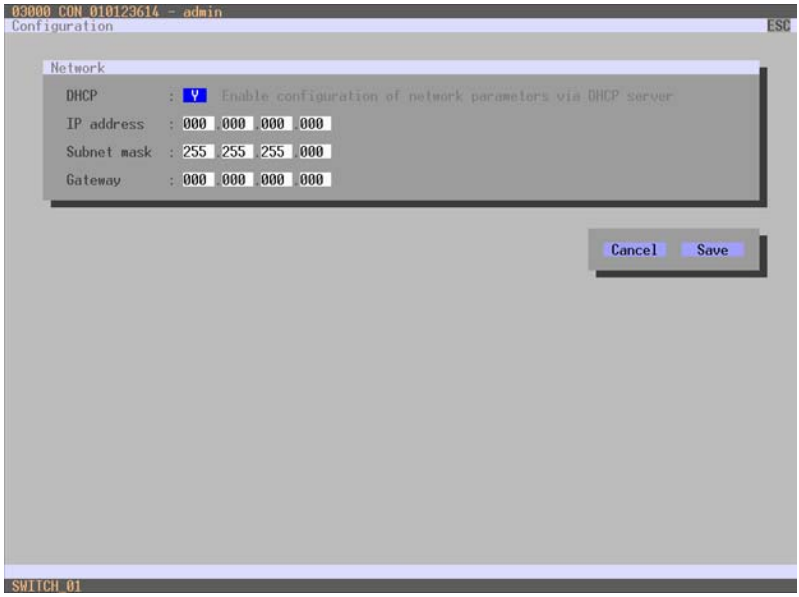
Field	Selection	Description
Gateway	Byte	Input of the subnet mask in the form "192.168.1.1", if DHCP is not active

Activate the modified network parameters by doing a restart.

Consult your system administrator before modifying the network parameters. Otherwise unexpected results and failures can occur in combination with the network.

OSD

➔ Select **Configuration > Network** in the main menu.



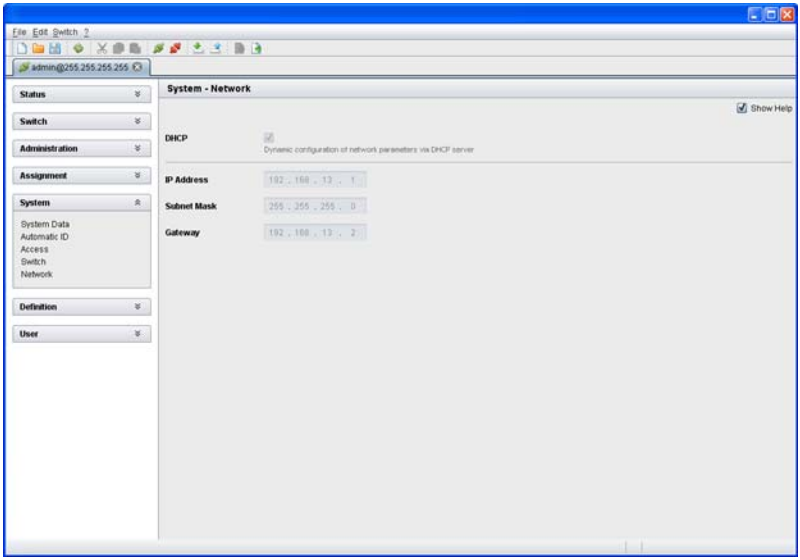
*Menu **Configuration – Network***

You can select between the following buttons:

Button	Function
Cancel	Reject changes
Save	Save changes

Java Tool

➔ Select **System > Network** in the task area.



*Menu **System – Network***

5.4.6 Date and Time

Date and Time are set in this menu.

You have the following possibility to access the menu:

You can select between the following settings:

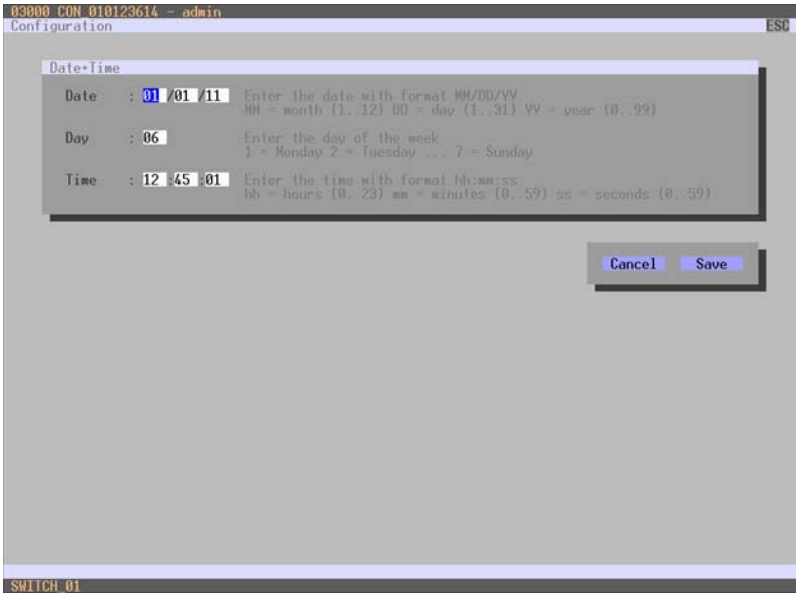
Field	Selection	Description
Month	1–12	Enter month
Date	1–31	Enter date
Year	1–99	Enter year
Day of the week	1–7	Enter week
Hours	0–23	Enter hour
Minutes	0–59	Enter minute

Field	Selection	Description
Seconds	0–59	Enter second

Date format according to the English notation.

OSD

➔ Select **Configuration > Date+Time** in the main menu.


03000 CON 010123614 - admin
Configuration
ESC
Date+Time
Date : 01 /01 /11
Enter the date with format MM/DD/YY
MM = month (1..12) DD = day (1..31) YY = year (0..99)
Day : 06
Enter the day of the week
1 = Monday 2 = Tuesday ... 7 = Sunday
Time : 12 :45 :01
Enter the time with format hh:mm:ss
hh = hours (0..23) mm = minutes (0..59) ss = seconds (0..59)
Cancel
Save
SWITCH_01

*Menu **Configuration – Date + Time***

You can select between the following buttons:

Button	Function
Cancel	Reject changes
Save	Save changes

5.5 User Settings

You have the possibility to configure the following user settings:

5.5.1 User Data

New users and their user settings and permissions are set in this menu.

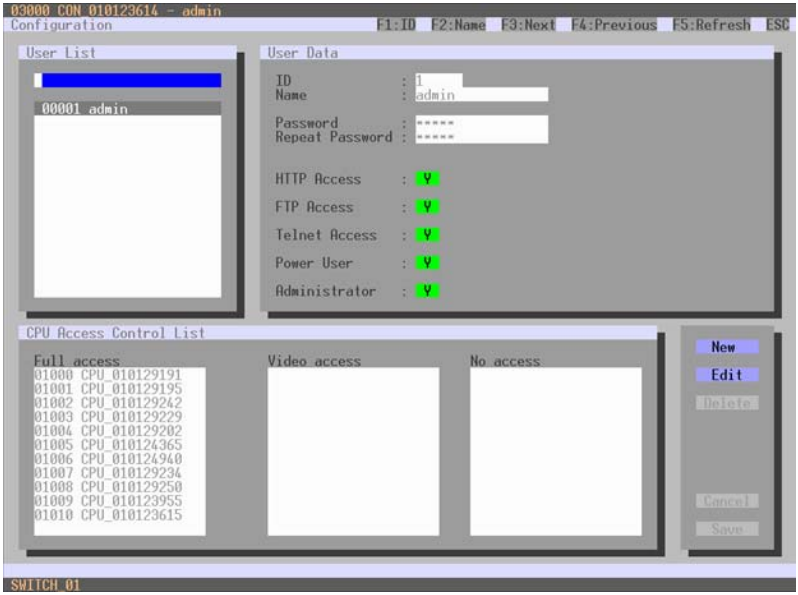
You have the following possibilities to access the menu:

You can select between the following settings:

Field	Selection	Description
Name	Text	User name (case sensitive)
Password	Text	User password (case sensitive)
Repeat Password	Text	Repeat user password (case sensitive)
HTTP	activated	Access permission via HTTP.
	deactivated	Function not active (default).
FTP	activated	Access permission via FTP. This setting is necessary for file access from the Java tool or any web browser.
	deactivated	Function not active (default).
TEL	activated	Access permission via Telnet.
	deactivated	Function not active (default).
POW	activated	• User has user rights • Permission for crosspoint operations
	deactivated	Function not active (default).
ADM	activated	• Permission for system configuration and all switching operations • User has administrator rights • This setting is required for an online connection with the Java tool
	deactivated	Function not active (default).

OSD

➔ Select **Configuration > User** in the main menu.



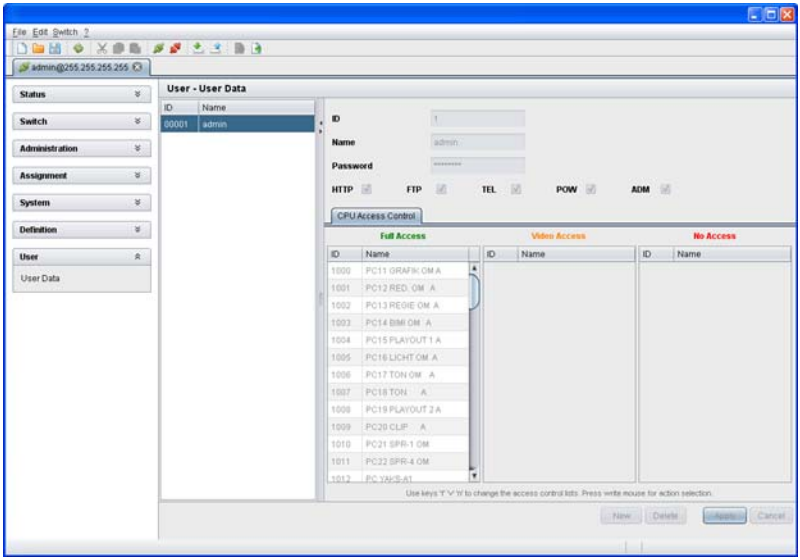
*Menu **Configuration – User***

You can select between the following buttons:

Button	Function
New	Create a new user
Edit	Edit an existing user
Delete	Delete an existing user
Cancel	Reject changes
Save	Save changes

Java Tool

➔ Select **User > User Data** in the task area.



*Menu **User – User Data***

You can select between the following buttons:

Button	Function
New	Open a new user configuration
Delete	Delete an existing user
Apply	Create a new user account
Cancel	Reject changes

To configure a user access rights for CPUs, proceed as follows:

1. Select a user in the list **User Data**.
2. By using the right mouse button once on a CPU in one of the respective access lists (**Full Access**, **Video Access** and **No Access**) two lists for selection will appear in which the respective CPU can be moved and the access rights can be changed.
3. Confirm the configuration with the button **Apply**.

To create a new user, proceed as follows:

1. Press the button **New**.
2. Select a template of an existing user if applicable (**Choose template**).
3. Press the button **OK**.
4. Set password.
5. Set general access permissions.
6. Set user permissions for CPU access (paste function).
7. Set user favorites for OSD access.
8. Press the Button **Apply** to save the new user settings.

You can select between the following keyboard commands:

Function	Keyboard Command
Add CPU to list **Full Access**	<F>
Add CPU to list **Video Access**	<V>
Add CPU to list **No Access**	<N>

5.6 Extender Settings

All extender units are managed in this menu. This also contains the creation of new extender units and the deletion of existing extender units.

The extender unit describes the connection of an physical extender to the matrix. Every extender board with a direct cable connection to the matrix is recognized as an extender unit. Dual-Head KVM extenders will be recognized as two independent extender units.

KVM Extenders automatically create extender units inside the matrix.

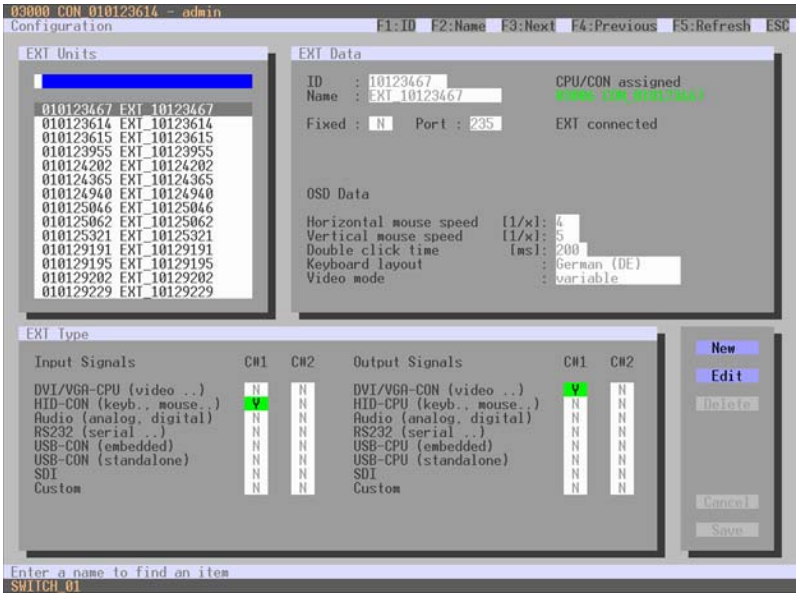
You have the following possibilities to access the menu:

You can select between the following settings:

Field	Selection	Description
ID	Text	Numerical value of the extender ID (KVM Extenders: ID is provided by extender unit (Serial No.) and cannot be changed)
Name	Text	Name of the extender unit
Fixed	activated	Create an extender unit with a fixed port assignment (default)
	deactivated	Function not active.
Port	1–288 (depending on the matrix)	Port number of the extender unit

OSD

➔ Select **Configuration > EXT Units** in the main menu.



*Menu **Configuration – EXT Units***

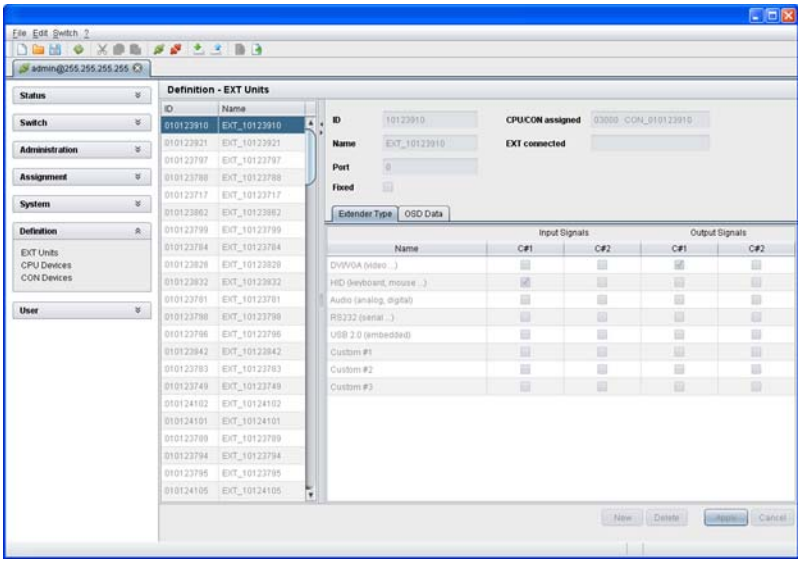
You can select between the following buttons:

Button	Function
New	Create a new extender unit
Edit	Edit an existing extender unit
Delete	Delete an existing extender unit
Cancel	Reject changes
Save	Save changes

The settings for the tab **OSD Data** are described in Chapter 5.8.2, Page 88.

Java Tool

➔ Select **Definition > EXT Units** in the task area.



*Menu **Definition – EXT Units***

You can select between the following buttons:

Button	Function
New	Create a new extender unit
Delete	Delete an existing unit
Apply	Confirm changes of an extender unit
Cancel	Reject changes

1. To create a new extender unit press the button **New**.
2. Select, if a template of an existing extender unit (**Choose extender as template**), a template of an predefined extender type (**Choose extender type**) or no template (**None**) should be used.
3. Press the button **OK**.
4. Set all relevant parameters for the extender unit.
5. Press the button **Apply** to save the new extender unit.

Created extender units are always set as fixed port extender. These configurations are necessary, if you want to switch e. g. USB 2.0 connections via the matrix.

5.7 CPU Settings

New CPU devices are configured in this menu including their assignment to extenders.

The assignment helps to describe and switch more complex computer configurations (e.g. Quad-Head with USB 2.0) in the matrix.

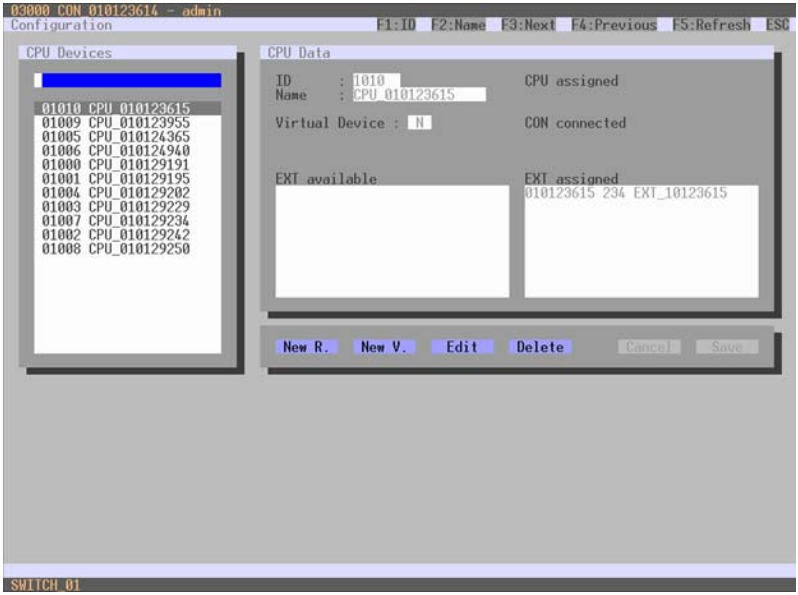
You have the following possibilities to access the menu:

You can select between the following settings:

Field	Selection	Description
ID	Text	ID of the CPU unit (see Chapter 5.4.2, Page 61
Name	Text	Name of the CPU Device.
Virtual Device	activated	Create new CPU device as a virtual one.
	deactivated	Function not active.

OSD

➔ Select **Configuration > CPU Units** in the main menu.



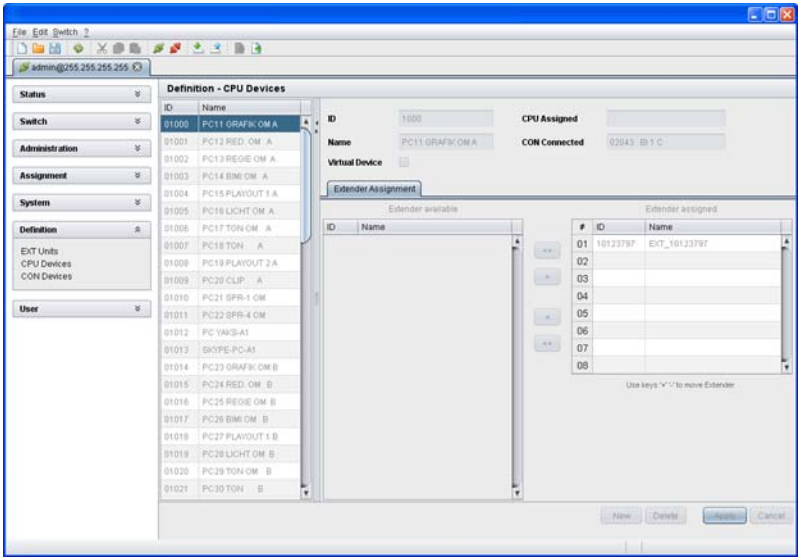
*Menu **Configuration – CPU Devices***

You can select between the following buttons:

Button	Function
New R.	Create a new real CPU device
New V.	Create a new virtual CPU device
Edit	Edit an existing CPU device
Delete	Delete an existing CPU device
Cancel	Reject changes
Save	Save changes

Java Tool

➔ Select **Definition > CPU Devices** in the task area.



*Menu **Definition – CPU Devices***

You can select between the following buttons:

Button	Function
New	Open a new CPU Device
Delete	Delete a new CPU Device
Apply	Confirm a created CPU Device
Cancel	Reject changes
>	Assign selected extender units
>>	Assign all available extender units
<	Remove the selected extender units
<<	Remove all extender units

You can select between the following keyboard commands:

Function	Keyboard Command
Change assignment number of the EXT unit upwards	<+>
Change assignment number of the EXT unit downwards	<->

To create a new CPU device, proceed as follows:

1. Press the button **New**.
2. Select, if a real CPU (**Create a real CPU**) or a virtual CPU (**Create a virtual CPU**) should be created or a template of an existing CPU should be used (**Choose template**).

A template can only be used, if there is at least one existing CPU device.

3. Press the button **OK**.
4. Determine all parameters that are relevant for the CPU.
5. To confirm the new CPU, press the button **Apply**.

To access a new CPU via matrix, an assignment of one or more CPU type extender units is required. Proceed as follows:

1. Select the new CPU in the list **CPU Devices**.
2. Select one or more extenders in the list **Extender available**.
3. Perform the assignment by pressing the button **>**. To assign all available extenders to the CPU, press the button **>>**.

   The assignments are displayed in the list **Extender assigned**.
4. Confirm the assignment by pressing the button **Apply**.

To remove an extender assignment, proceed as follows:

1. Select a CPU in the list **CPU Devices**.
2. Select one or more extenders in the list **Extender assigned**.
3. Remove the assignment with the button **<**. To remove all existing assignments, press the button **<<**.
4. Confirm the removal with the button **Apply**.

5.8 Console Settings

You have the possibility to perform the following console settings:

5.8.1 CON Devices

New CON devices are created in this menu including access rights and assignment to extenders.

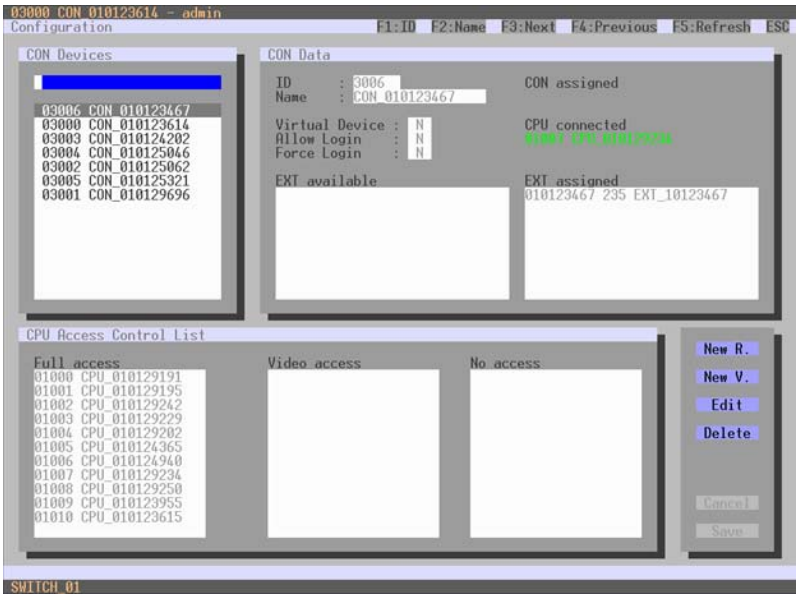
You have the following possibilities to access the menu:

You can select between the following settings:

Field	Selection	Description
ID	Text	ID of the CON unit (see Chapter 5.4.2, Page 61).
Name	Text	Name of the CON Device.
Virtual Device	activated	Create new CON device as a virtual one.
	deactivated	Function not active (default).
Allow Login	activated	Allow user login at this CON device.
	deactivated	Function not active (default).
Force Login	activated	Force user login at this CON device.
	deactivated	Function not active (default).
LOS Frame	activated	• If there is a loss of connection, the last picture shown will be still displayed and is surrounded by an orange frame. • If you switch to a CPU without video signal, a blank screen will appear surrounded by an orange frame.
	deactivated	Function not active (default).

OSD

➔ Select **Configuration > CON Devices** in the main menu.



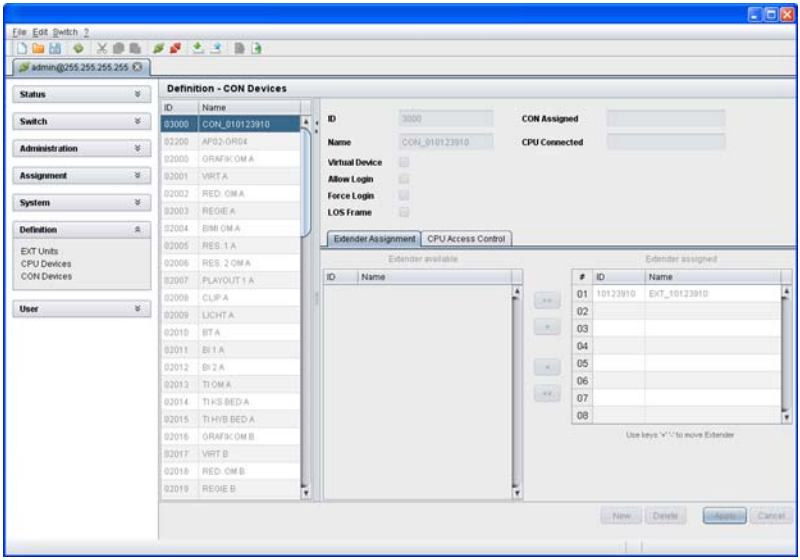
*Menu **Configuration – CON Devices***

You can select between the following buttons:

Button	Function
New R.	Create a real console
New V.	Create a virtual console
Edit	Edit an existing console
Delete	Delete an existing console
Cancel	Reject changes
Save	Save changes

Java Tool

➔ Select **Definition > CON Devices** in the task area.



*Menu **Configuration – CON Devices***

You can select between the following buttons:

Button	Function
New	Open a new CON device
Delete	Delete a new CON device
Apply	Confirm a created CON device
Cancel	Reject changes
>	Assign selected extender units
>>	Assign all available extender units
<	Remove the selected extender units
<<	Remove all extender units

You can select between the following keyboard commands:

Function	Keyboard Command
Decrease assignment number of the extender unit	<+>
Increase assignment number of the extender unit	<->

To create a new console, proceed as follows:

1. Press the button **New**.
2. Select, if a real console (**Create a real Console**) or a virtual console (**Create a virtual Console**) should be created or a template of an existing console should be used (**Choose template**).

A template can only be used, if there is at least on existing CON device.

3. Press the button **OK**.
4. Determine all parameters that are relevant for the console.
5. To confirm a created console, press the button **Apply**.

To run a created CPU via matrix, it requires an assignment of one or more CON units (extender). To place an assignment, please proceed as follows:

1. Select the console in the list **CON Devices** that has to be assigned to an extender.
2. Select the extender in the list **Extender available** that should be assigned to the CON.
3. Perform the assignment by pressing the button **>**. To assign all available extenders to the console, press the button **>>**. The assignments are displayed in the list **Extender assigned**.
4. Confirm the assignment by pressing the button **Apply**.

To remove an extender assignment, proceed as follows:

1. Select the console in the list **CON Devices** to be modified.
2. Select the extender(s) in the list **Extender assigned** to be removed.
3. Remove the assignment with the button **<**. To remove all existing assignments, press the button **<<**.
4. Confirm the changes by pressing the button **Apply**.

To configure the access rights of consoles to CPUs, please proceed as follows:

1. Select a console in the list **CON Devices**.
2. Open the tab **CPU Access Control**.
3. Assign new access rights by using the right mouse button or the respective keyboard commands (cf. below).
4. Confirm the configuration by pressing the button **Apply**.

After creating a new user, he is provided automatically with **Full Access** to all available CPUs.

You can select between the following keyboard commands:

Function	Keyboard Command
Add CPU to list **Full Access**	<F>
Add CPU to list **Video Access**	<V>
Add CPU to list **No Access**	<N>

5.8.2 Mouse and Keyboard

The OSD configuration for mouse and keyboard is made in this menu.

You have the following possibilities to access the menu:

You can select between the following settings:

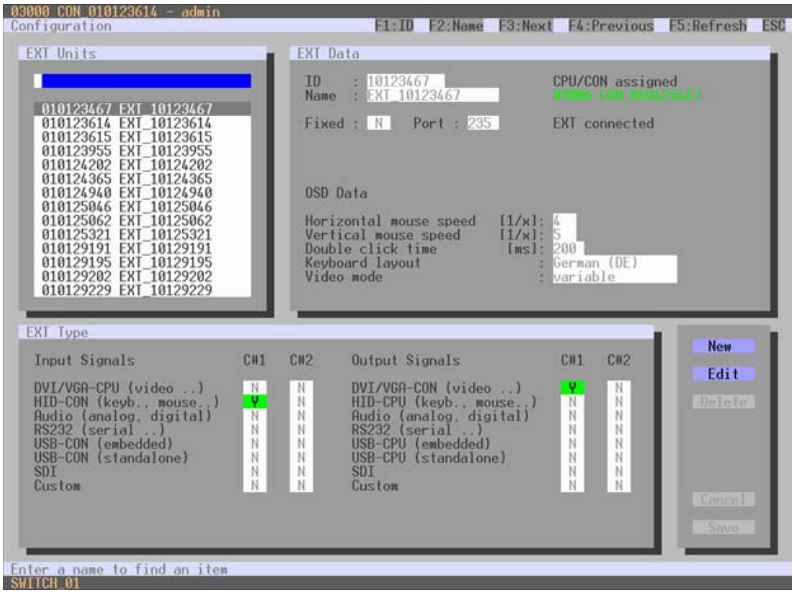
Field	Selection	Description
Hor. Speed 1/x	1–9	Adjustment of the horizontal mouse speed, 1 = slow, 9 = fast (default value: 4)
Ver. Speed 1/x	1–9	Adjustment of the vertical mouse speed, 1 = slow, 9 = fast (default value: 5)
Double Click	100–800	Adjustment of the time slot for a double click (default value: 200 ms)
Keyboard layout	Region	Set the OSD keyboard layout according to the used keyboard (default: German (DE))

Field	Selection	Description
Video Mode	Variable or specific resolution	Resolution that is used when opening OSD

The mouse and keyboard settings are console specific and can be separately set for every console.

OSD

➔ Select **Configuration > EXT Units** in the main menu.



*Menu **Configuration – EXT Units***

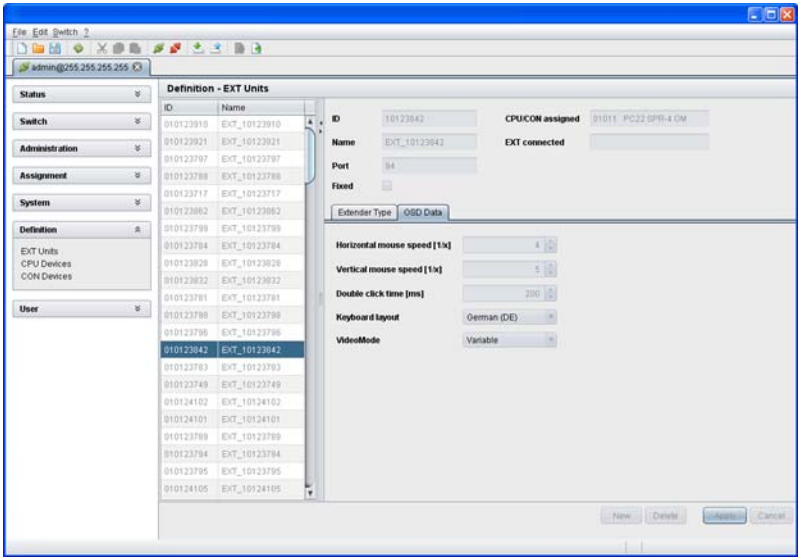
You can select between the following buttons:

Button	Function
Cancel	Reject changes
Save	Save changes

Java Tool

➔ Select **Definition > EXT Units** in the task area.

Mouse and keyboard settings are made in the tab **OSD Data**.



*Menu **Definition – EXT Units***

5.9 Saving and Loading of Configurations

You have the possibility to set the following administration of configurations:

5.9.1 Active Configuration

You have the following possibility to access the menu:

➔ Select **Configuration > Save** in the main menu.

By selecting this menu item, the active configuration of the matrix is saved to the permanent matrix memory. By default, the last configuration that has been saved in this way will be restored after a restart of the matrix.

Changing configurations or saving them blocks the matrix memory and leads to a freeze of all OSD menus for a few seconds. The switching connections are not affected by this freeze.

If you select **Auto Save** within the system settings an additional automatic saving of the configuration will be performed periodically (see Chapter 5.3.2, Page 56).

5.9.2 Saving of Configurations (internal)

In this menu the current matrix configuration to predefined storage locations is saved. However, it does not replace the buffering of configuration (see Chapter 5.9.1, Page 91).

You have the following possibilities to access the menu:

In **Active**, the name and detailed information of the current configuration are shown. This configuration can be saved now.

In **Default** and **File #1** to **File #8**, the name and the detailed information of the respective saved configuration are shown. These storage locations can be overwritten.

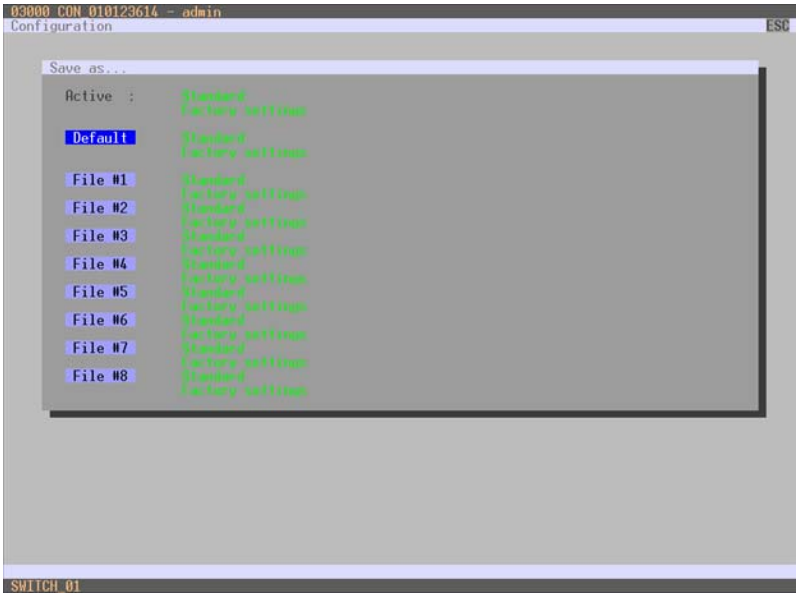
The storage location that has to be overwritten by the current configuration must be selected explicitly.

Afterwards the current configuration will be saved to this storage location and will be immediately shown in the menu. The previously saved configuration that has been saved to this storage location is deleted.

OSD

You have the possibility to save the created configuration within eight storage locations in the matrix (**File #1** – **File #8**). Additionally a configuration can also be saved as default configuration.

1. Select **Configuration > Save As…** in the main menu.
2. Select the required storage location (**File #1** – **File #8**) or **Default**.

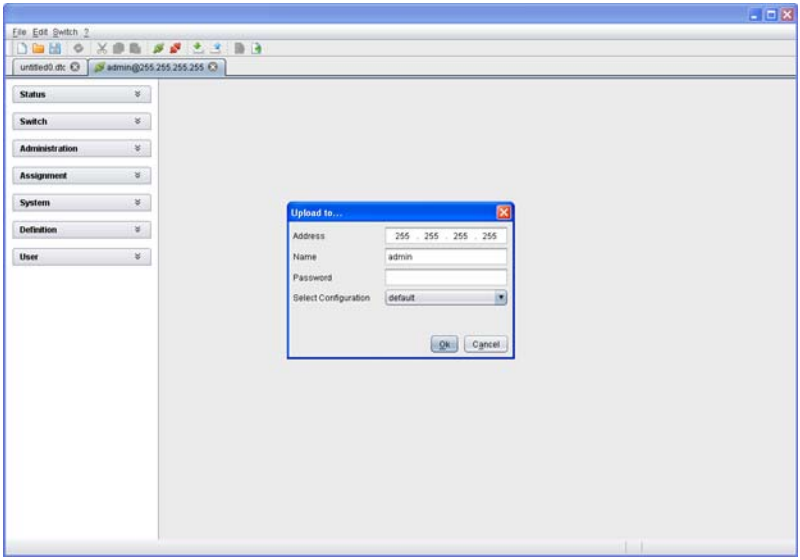


*Menu **Configuration – Save as***

Java Tool

To save the configuration into the internal matrix memory, proceed as follows:

1. Select **File > Upload to…** in the menu bar.
2. Enter the IP address of the matrix, your user name and your password and select the storage location in that the configuration has to be saved (**default** or **config01** – **config08**).
3. Confirm with the button **OK**.



*Menu **File – Upload to…***

5.9.3 Loading of Configurations (internal)

Previously saved configurations are loaded in this menu.

You have the following possibilities to load configurations from files:

In **Active**, the currently loaded configuration is displayed.

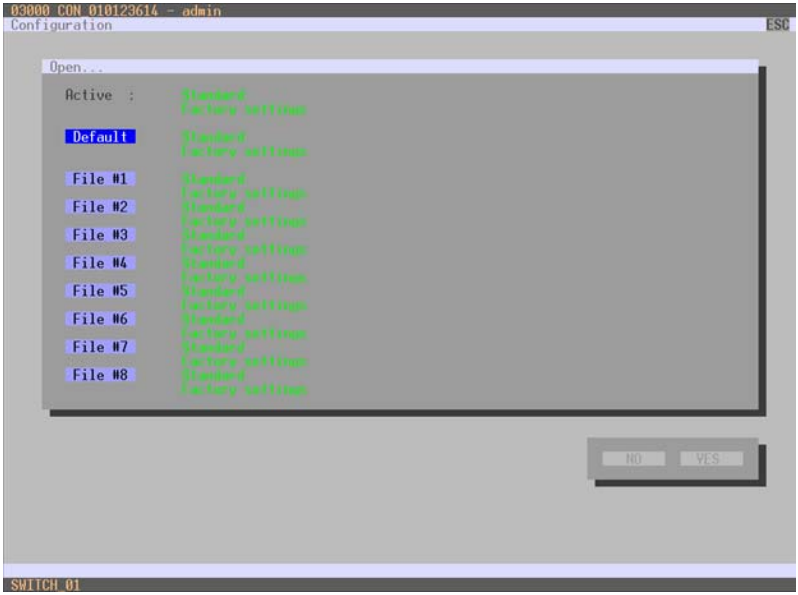
In addition to the default configuration, up to eight further configurations can be loaded.

The selection of the configuration that has to be loaded can be made between eight personalizable configurations and the default settings.

The selected configuration is will be immediately loaded and displayed in the menu as **Active**. The previously active configuration is deleted.

OSD

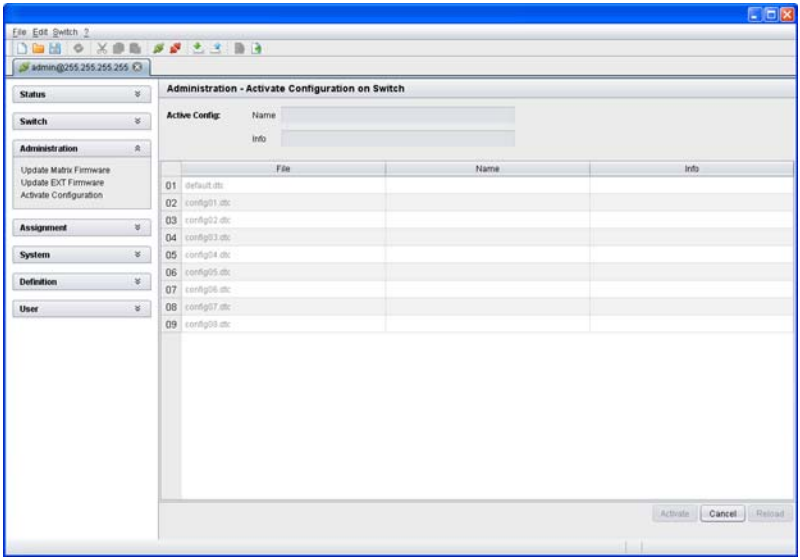
1. Select **Configuration > Open** in the main menu.
2. Select the desired configuration.
3. Load the configuration by pressing the key <Enter>.



*Menu **Configuration – Open...***

Java Tool

1. Select **Administration > Activate Configuration** during online-mode in the task area
2. Select the required configuration.
3. Load the configuration by pressing the button **Activate**.



*Menu **Administration – Activate Configuration on Switch***

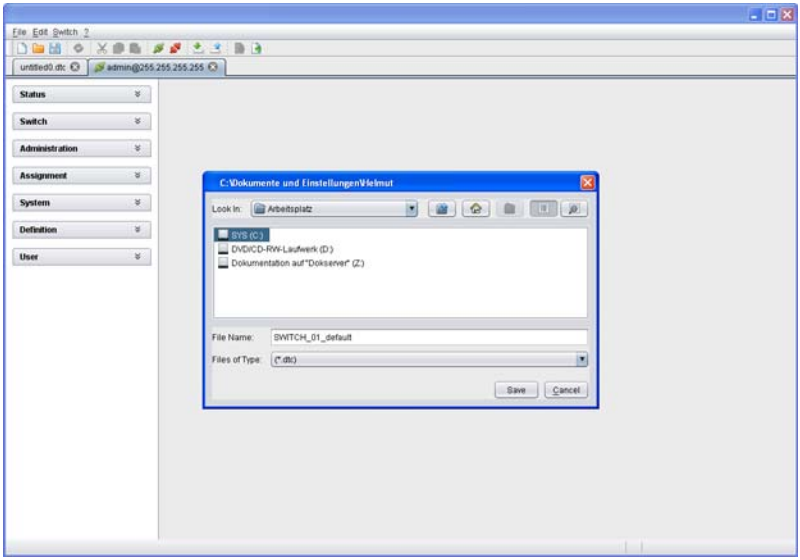
5.9.4 Saving of Configurations (external)

Created configurations can be saved as a file and so become independent of the matrix and transportable.

You have the following possibility to access the menu:

1. Select **File > Save As** in the menu bar.
2. Select the directory of the configuration on your storage medium where it has to be saved.

Configurations are always saved in a file with the ending dtc.



*Menu **File – Save As***

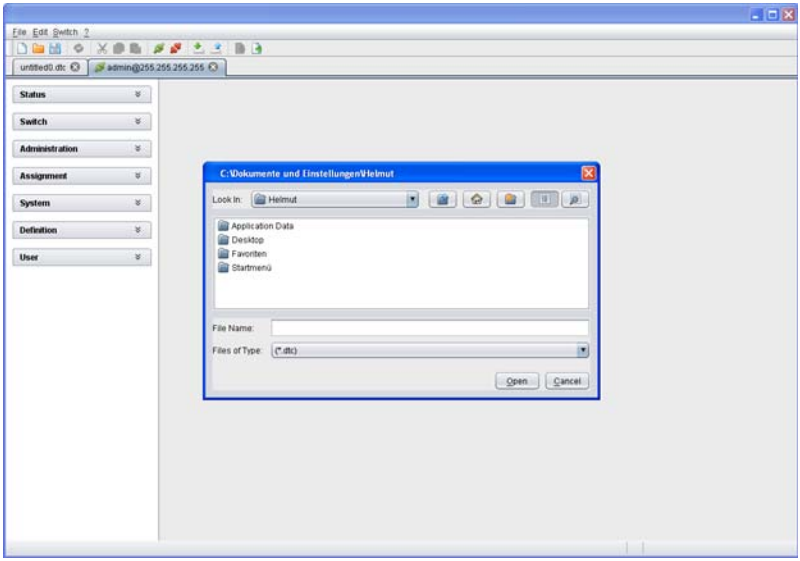
5.9.5 Loading of Configurations (external)

Externally saved configurations are opened and activated in this menu.

You have the following possibilities to load configurations from files:

1. Select **File > Open…** during offline-mode and select the storage location of the configuration file that has to be opened.
2. Open the configuration by pressing the button **Open**.
3. Select **File > Upload to…** in the menu bar to transfer the opened configuration to the matrix. Enter the necessary parameters.
4. Select **Switch > Connect** in the menu bar to make a connection between the matrix and the Java tool. Enter the necessary parameters.
5. Select **Administration > Activate Configuration** and select the configuration that has to be activated.
6. Confirm the process with the button **Activate**.

The opened configuration is activated now and can be used.



*Menu **File – Open…***

5.10 Export and Import Options

The Draco tera offers the possibility to read out available configuration lists (extender, CPUs, consoles and users) for exporting and importing again via Java tool. You have the following possibilities to handle configuration lists.

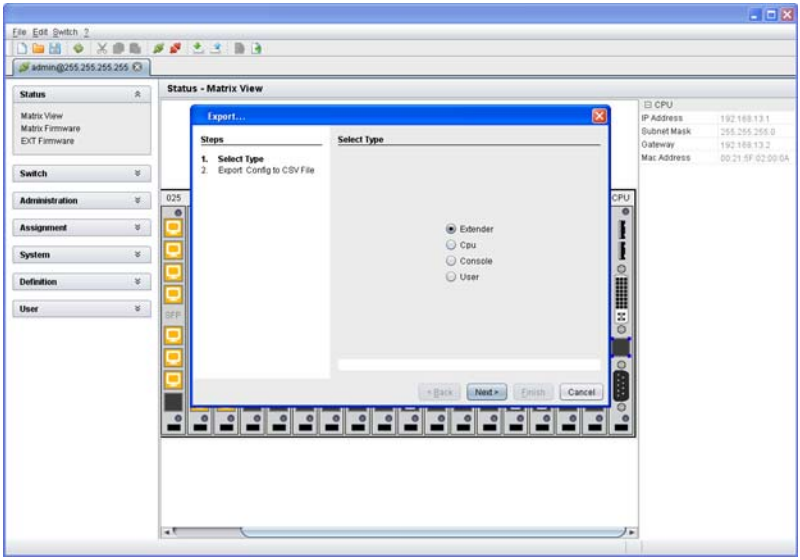
Exported configuration lists are always saved in .csv format that allows offline editing with common spreadsheet applications.

You have the following possibilities to export or import configuration lists:

5.10.1 Export Options

Configuration lists are exported in this menu. To export, proceed as follows:

1. Select **File > Export** in the menu bar.
2. After opening the menu, select the list to export (**Extender, CPU, Console** or **User**).
3. Select the storage location for the export file.
4. Confirm the export with the button **Finish**.

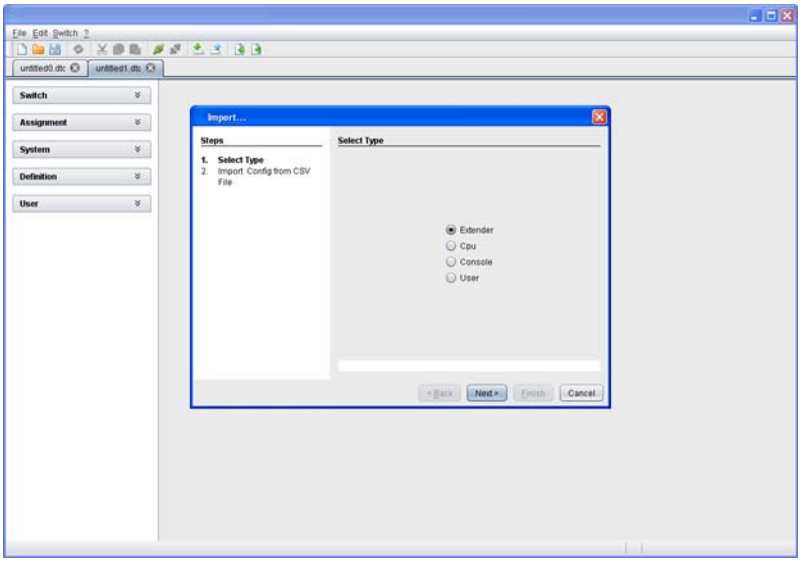


*Menu **File – Export***

5.10.2 Import Options

Configuration lists are imported in this menu. To import, proceed as follows:

1. Select **File > Import** in the menu bar.
2. After opening the menu, select the list to import (**Extender, CPU, Console** or **User**).
3. Select the directory of the list to import.
4. Confirm the import with the button **Finish**.



*Menu **File – Import...***

5.11 Firmware Update

5.11.1 Matrix Update

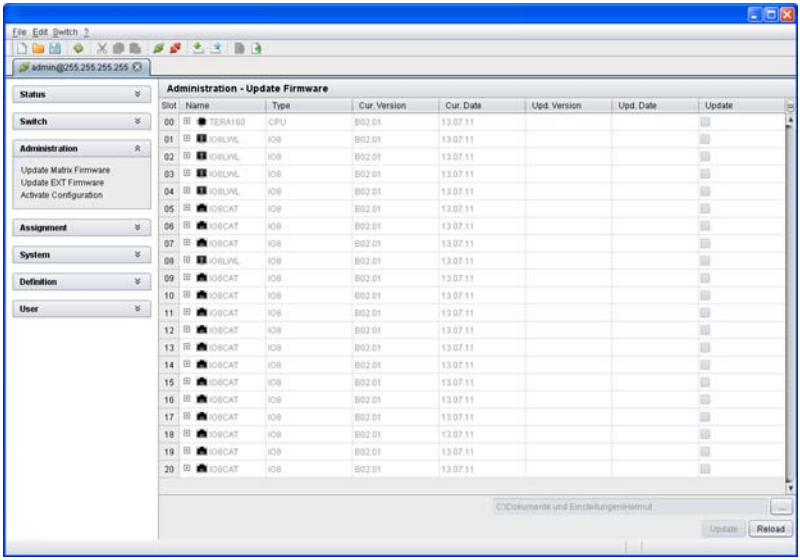
The firmware of the matrix can be updated in this menu.

You have the following possibility to access the menu:

Java Tool

Only use computers to update the matrix that are self-sustaining and not integrated in the KVM extender / matrix setup.

1. Select **Administration > Update Matrix Firmware** in the task area.



*Menu **Administration – Update Matrix Firmware***

2. Select the directory in the lower part of the working area in which the update files can be found.

Open the file **defaults.cfg** and insert in the parameter **upd.dir** the directory from which the update files should be standardly sourced.

3. Select those modules in the list that have to be updated and enable the respective checkbox in the column **Update**.
4. Start the update by pressing the button **Update** in the appearing pop up window.
5. If the expected period of time for one update will exceed 20 minutes, cancel the update. Open the file **defaults.cfg** and set the parameter **safemode** to **true**.
6. Restart the Matrix after the update by pressing the button **Restart matrix** in the lower part of the working area.

Serial Interface

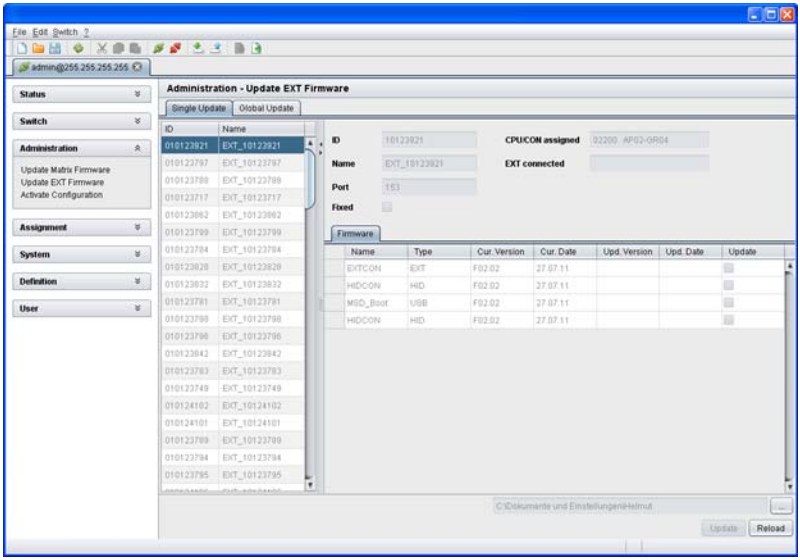
!Text folgt!

5.11.2 Extender Update

The firmware of the extenders connected to the matrix can be updated in this menu.

You have the following possibilities to access the menu:

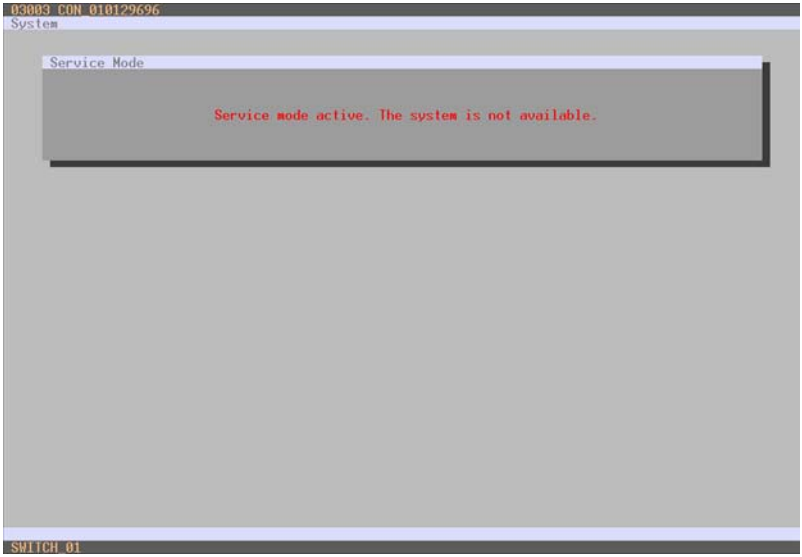
1. Select **Administration > Update EXT Firmware** in the task area.



*Menu **Administration > Update EXT Firmware***

2. Set the matrix into Service Mode upon request in the popup window or via **Switch > Activate Service Mode** in the menu bar.

   During activation, all matrix functions are disabled. An OSD picture indicates the activation of the Service Mode and is displayed on all monitors that are connected to the matrix via a CON device. Additionally, the Service Mode is indicated by a red tool icon in the lower part of the working area.



*OSD View **Service Mode***

3. Select the directory in the lower part of the working area in which the update files can be found.
4. Select those extender modules in the list that have to be updated and enable the respective checkbox in the column **Update**.
5. Start the update by pressing the button **Update** in the lower part of the working area.
6. Quit Service Mode after updating upon request in the popup window or via **Switch > Deactivate Service Mode** in the task area.

6 Operation

The Draco tera can be operated in three different ways:

1. Direct Switching

- via a keyboard connected to a CON port and the 'Hot Keys'
- by a macro keyboard connected to a console port

2. OSD

- via keyboard/mouse directly connected to the CPU board of the matrix
- via keyboard/mouse connected to a CON Unit and the OSD

3. External Switching Commands:

- via an external computer via Java tool (network connection required)
- via a media control (network or serial connection required)

6.1 Operation via 'Hot Keys'

6.1.1 Direct Switching

The direct switching by 'Hot Keys' on a keyboard is the fastest possibility for a user to switch at his console between different CPUs. There is a possibility to switch video, keyboard and mouse or only video.

Direct Switching of Video, Keyboard and Mouse

1. Start Command Mode with the 'Hot Key'.

   For control, the LEDs **Shift** and **Scroll** flash at the keyboard, if Command Mode is activated.

2. Enter the index number of the new CPU from the list of favorites and confirm with <Enter>.

   At the same time the Command Mode is closed and the console is connected to the new CPU with complete control.

Best results regarding switching time can be achieved by using identical mice, keyboards and monitors. This contributes to a smooth and delayless direct switching of the matrix.

Direct Switching of Video

1. Start Command Mode with the 'Hot Key'. For control, the LEDs **Shift** and **Scroll** flashes at the keyboard, if command mode is activated.
2. Enter the index number of the new CPU from the list of favorites and confirm with <Space>.

At the same time the Command Mode is closed and the console is connected to the new CPU with video only.

You can only switch to not used and allowed CPUs with the 'Hot Keys'. The options **Force Connect** and **Force Disconnect** as well as the restrictions of the User ACL and CON ACL are taken into account.
'Hot Keys' are only supported, if neither **Enable User Login** nor the **Enable User ACL** is selected and the user is logged in the OSD.

6.1.2 Scan Mode

The Scan Mode offers the possibility to show video signals of the different CPUs fast and without delay and offers switching in between without continuously using the 'Hot Key'. The switching between two video signals can even take place within one frame.

1. Start command mode with the 'Hot Key'. For control, the LEDs **Shift** and **Scroll** flashes at the keyboard, if command mode is activated.
2. Press the key <Left Shift> and hold it down. You can now enter the index numbers of the various CPUs from the list of favorites with the keyboard and immediately switch to the video signal of the respective CPU after entering the index number.
3. Leave Scan Mode by pressing <Left Shift> + <Esc>.

Optimal results can be achieved by the use of as identical resolutions as possible. This contributes to a smooth and delay less function of the scan mode.

6.1.3 Addressing of Main and Sub Matrices

The Draco tera can be cascaded in two steps. You can optionally send the commands (including opening the OSD) to the main or the sub matrix.

Whenever command mode is activated, you can select by a <m> or a <s>, if all of the following commands should be handled in the main or in the sub matrix.

OSD Access

- OSD access to the main matrix:

  <Left Shift>, <Left Shift>, <m> (optional), <o>
- OSD access to the sub matrix:

  <Left Shift>, <Left Shift>, <s>, <o>

Example: Switching to the CPU port 23 of the sub matrix.

1. Switching to the CPU Port (e.g. 12) of the master matrix that have the connection to the sub matrix:
   <Left Shift>, <Left Shift>, <m> (optional), <1>, <2>, <Enter>
2. Switching to the CPU Port 23 of the sub matrix:
   <Left Shift>, <Left Shift>, <s>, <2>, <3>, <Enter>

The selected main matrix / sub matrix mode is permanently activated until the other mode will be manually activated. This means that if you select <s> for example, all prospective commands will be sent to the slave, but not if the Command Mode is left in the meantime.

6.1.4 Function Keys <F1>–<F12>

In Command Mode you can retrieve the macros 1–12 with the function keys <F1>–<F12> of the connected standard keyboard instead of the special macro keyboard.

The deposited command sequence for the appropriate function key is executed and Command Mode is left immediately.

By a prefixed <s> or <S> and <m> or <M> you can select, if the command sequence should be executed for the master or the slave.

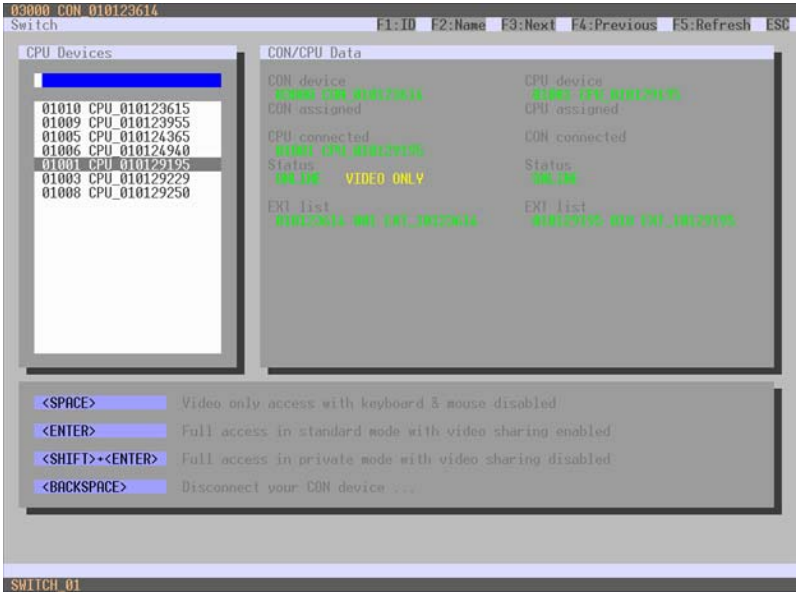
The chosen control level remains selected, until the other one will be selected, but not if Command Mode is left in the meantime.

6.2 KVM-Switching

You have the following possibilities to perform switching operation with the Draco tera:

OSD

➔ Select **Switch** in the main menu.



*Menu **Switch***

The following information is shown in this menu:

Field	Description
CON device	Assigned physical extender unit (CON unit)
CON assigned	Virtual CON Device that is assigned to the real CON device
CPU connected	Currently connected CPU device
CON status	Current connection status (CON device)
EXT list	List of all available physical extender units (CON units)
CPU device	Assigned physical extender unit (CPU unit)
CPU assigned	Real CPU device that is assigned to a virtual CPU device
CON connected	Currently connected CON device
CPU status	Current connection status (CPU device)
EXT list	List of all available physical extender units (CPU units)

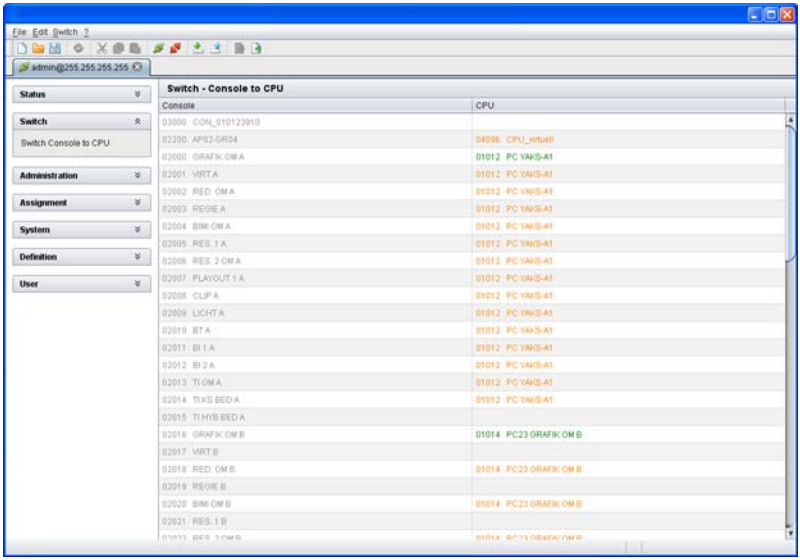
You can select between the following switching functions:

Function	Keyboard Command
Set a video only connection.	<Space>
Set a KVM connection.	<Enter>
Set a KVM connection in private mode (video sharing disabled).	<Shift> + <Enter>
Disconnect own CON device from CPU device.	<Backspace>

Switching operations from the own CON device can only be done to CPU devices that are available in the list **CPU Devices**.

Java Tool

➔ Select **Switch > Switch Console to CPU** in the task area.



*Menu **Switch – Switch Console to CPU***

All connected consoles and the associated CPU connections are shown in columns in the working area in this menu.

Switching operations can only be performed in online mode, that means an active network connection between the matrix and the Java Tool is needed.

➔ To set a **KVM connection** between a console and a CPU, double-click on the corresponding selection box within the CPU column and select the requested CPU (**green**).

➔ To set a **video connection** between a console and a CPU, double-click on the corresponding selection box within the CPU column and select the requested CPU (**orange**).

CPUs whose respective console does not have access rights, will not appear in the list.

You can use the following button to perform a switching operation:

Button	Function
Send	Send effected switching operations to the matrix

By activating the function **Auto Send** in the left lower corner of the working area, switching operations will be done immediately without confirmation by pressing the button **Send**.

Additionally, the menu offers the possibility to get from any console or CPU into the associated configuration menu in the task area.

1. To get directly to **Definition > CON Devices**, use the right mouse button to click on the respective console in the list and select **Open CON Device**.
2. To get directly to **Definition > CPU Devices** use the right mouse button to click on the respective console in the list and select **Open CPU Device**.

6.3 Serial Interface

The Draco tera offers the possibility to switch via a serial interface (RS232).

Detailed information for the serial interface and the corresponding switching commands can be found in Chapter 7.4, Page 120.

6.4 Power On and Power Down Functions

6.4.1 Restart

You have the following possibilities to perform a restart:

OSD

1. Select **Configuration > Restart Matrix** or **Restart IO Board** in the main menu to restart either the matrix or the I/O boards.
2. Confirm the selection with button **YES**.

The Draco tera will be restarted with the current settings.

Java Tool

➔ Select **Switch > Restart Matrix** in the menu bar.

The Draco tera will be restarted with the current settings.

6.4.2 Reset

You have the following possibilities to perform a reset of the system:

If a firmware update has been done since the delivery, the matrix will be set to the state defined there.

OSD

1. Select **Configuration > Reset Matrix** in the main menu.
2. Confirm the selection with the button **YES**.

The Draco tera will be reset to factory settings.

6.4.3 Power Down

➔ Slide the on and off switch at the main sockets of the power supply units to start or switch off the matrix.

7 Specifications

7.1 Interfaces

7.1.1 DVI-D Single Link

The video interface supports the DVI-D protocol. All signals that comply to DVI-D Single Link norm can be transmitted. This includes e.g. monitor resolutions such as 1920x1200@60Hz, Full HD (1080p) or 2K HD (up to 2048x1152). Data rate is limited to 165 MPixel/s.

7.1.2 USB-HID

Our devices with USB-HID interface support a maximum of two devices with USB-HID protocol. Each USB-HID port provides a maximum current of 100 mA.

Keyboard

Compatible with most USB keyboards. Certain keyboards with additional functions may require custom firmware to operate. Keyboards with an integral USB Hub (Mac keyboards e.g.) are also supported.

Mouse

Compatible with most 2-button, 3-button and scroll mice.

Other USB-HID devices

The proprietary USB emulation also supports certain other USB-HID devices, such as specific touch screens, graphic tablets, barcode scanners or special keyboards. Support cannot be guaranteed, however, for every USB-HID device.

Only two USB-HID devices are supported concurrently, such as keyboard and mouse or keyboard and touch screen. A hub is allowed, but it does not increase the number of HID devices allowed.
To support other USB 'non-HID' devices, such as scanners, web cams or memory devices, choose our devices with transparent USB support.

7.1.3 RJ45 (Network)

The communication of the Cat X devices requires a 1000BASE-T connection.

The cabling has to be done according to EIA/TIA-568-B (1000BASE-T) with RJ45 connectors at both ends. All of the four wire pairs are used in both directions. The cabling is suitable for a full duplex operation. For the cable connection to a source (computer, CPU), a crossed network cable (cross cable) has to be used.

7.1.4 RS-232 (Serial)

The communication takes place with a transmission speed of up to 115.2 KBaud, regardless of the file format. The transmission takes place with eight data bits and a stop bit, but without a parity bit. Limited hardware handshake (DSR) is possible.

7.1.5 RJ45 (Interconnect)

The communication of the Cat X devices requires a 1000BASE-T connection.

Connector wiring must comply with EIA/TIA-568-B (1000BASE-T), with RJ45 connectors at both ends. All four cable wire pairs are used.

7.1.6 Fiber SFP Type LC (Interconnect)

The communication of fiber devices is performed via Gigabit SFPs that have to be connected to suitable fibers fitted with connectors type LC (see Chapter 7.2.2, Page 116).

The correct function of the device can only be guaranteed with SFPs provided by the manufacturer.

SFP modules can be damaged by electrostatic discharge (ESD).
➔ Please consider ESD handling specifications.

7.1.7 SDI (Interconnect)

The communication of the SDI devices requires a mini coax connection with mini BNC connectors or 3G SFPs with transmission speeds of 0,360 Gbit/s (SD-SDI, SMPTE 259M), 1,485 Gbit/s (HD-SDI, SMPTE 292M) and 2,970 Gbit/s (3G SDI).

7.2 Interconnect Cable

7.2.1 Cat X

A point-to-point connection is required. Operation with several patch fields is possible. Routing over an active network component, such as an Ethernet Hub, Router or Matrix, is not allowed.

➔ Avoid routing Cat X cables along power cables.

➔ If the site has 3-phase AC power, try to ensure that CPU Unit and CON Unit are on the same phase.

To maintain regulatory EMC compliance, correctly installed shielded Cat X cable must be used throughout the interconnection link.

To maintain regulatory EMC compliance, all Cat X cables need to carry ferrites on both cable ends close to the device.

Type of Interconnect Cable

The Draco tera requires interconnect cabling specified for Gigabit Ethernet (1000BASE-T). The use of solid-core (AWG24), shielded, Cat 5e (or better) is recommended.

Cat X Solid-Core Cable AWG24	S/UTP (Cat 5e) cable according to EIA/TIA-568-B. Four pairs of wires AWG24. Connection according to EIA/TIA-568-B (1000BASE-T).
Cat X Patch Cable AWG26/8	S/UTP (Cat 5e) cable according to EIA/TIA-568-B. Four pairs of wires AWG26/8. Connection according to EIA/TIA-568-B (1000BASE-T).

The use of flexible cables (patch cables) type AWG26/8 is possible, however the maximum possible extension distance is halved.

Maximum Acceptable Cable Length

Cat X Installation Cable AWG24	140 m (400 ft)
Cat X Patch Cable AWG26/8	70 m (200 ft)

7.2.2 Fiber

A point-to-point connection is necessary. Operation with multiple patch panels is allowed. Routing over active network components, such as Ethernet Hubs, Matrixes or Routers, is not allowed.

Type of Interconnect Cable

(Cable notations according to VDE)

Type of cable	Specifications
Single-mode 9µm	• Two fibers 9µm • I-V(ZN)H 2E9 (in-house patch cable) • I-V(ZN)HH 2E9 (in-house breakout cable) • I/AD(ZN)H 4E9 (in-house or outdoor breakout cable, resistant) • A/DQ(ZN)B2Y 4G9 (outdoor cable, with protection against rodents)
Multi-mode 50µm	• Two fibers 50µm • I-V(ZN)H 2G50 (in-house patch cable) • I/AD(ZN)H 4G50 (in-house or outdoor breakout cable, resistant)
Multi-mode 62.5µm	• Two fibers 62.5µm • I-V(ZN)HH 2G62,5 (in-house breakout cable) • A/DQ(ZN)B2Y 4G62,5 (outdoor cable, with protection against rodents)

Only use Single-mode connection cables for fiber connections that are based on 3G SFPs.

Maximum Acceptable Cable Length

Type of cable	Maximum Acceptable Cable Length
Single-mode 9µm	10,000 m (32,800 ft)
Multi-mode 50µm (OM3)	1,000 m (3,280 ft)
Multi-mode 50µm	400 m (1,300 ft)
Multi-mode 62.5µm	200 m (650 ft)

If you use single-mode SFPs with multi-mode fibers, you normally can double the maximum acceptable cable length.

Type of Connector

Connector	LC Connector

7.2.3 Coaxial

A point-to-point connection is necessary.

Type of Interconnect Cable

Cable Type	Specifications
Mini coaxial cable AWG 18	RG 6 impedance 75 Ω

Maximum Acceptable Cable Length

Band Width	Maximum Acceptable Cable Length
0.270 Gbit/s	400 m (1,312 ft)
1.485 Gbit/s	140 m (459 ft)
2.970 Gbit/s	120 m (394 ft)

Type of Connector

Connector	Mini BNC connector

7.3 Supported Peripherals

7.3.1 KVM Extenders

The following KVM extenders are released for the use with the Draco tera:

KVM Extender with Cat X Connection, K477 Series

Type	Description
L477-1SHC	Draco tera KVM CPU Unit, Single-Head, 2x USB-HID
R477-1SHC	Draco tera KVM CON Unit, Single-Head, 2x USB-HID
L477-1S4CA	Draco tera KVM CPU Unit, Single-Head, Analog Audio, 4x USB-HID
R477-1S4CA	Draco tera KVM CON Unit, Single-Head, Analog Audio, 4x USB-HID

Type	Description
L477-1S4CD	Draco tera KVM CPU Unit, Single-Head, Digital Audio, 4x USB-HID
R477-1S4CD	Draco tera KVM CON Unit, Single-Head, Digital Audio, 4x USB-HID
L477-1STC	Draco tera KVM CPU Unit, Single-Head, 2x USB-HID, 4x USB 2.0
R477-1STC	Draco tera KVM CON Unit, Single-Head, 2x USB-HID, 4x USB 2.0
L477-2S4C	Draco tera KVM CPU Unit, Dual-Head, 4x USB-HID
R477-2S4C	Draco tera KVM CON Unit, Dual-Head, 4x USB-HID
L477-SHCV	Draco tera KVM CPU Unit, Single-Head, DVI-I input (VGA), 2x USB-HID
R477-SHCV	Draco tera KVM CON Unit, Single-Head, DVI-I Input (VGA), 2x USB-HID

KVM Extender with Cat X Connection, K474 Series

Type	Description
L474-BSHC	Draco tera KVM CPU Unit, Single-Head, 2x USB-HID
R474-BSHC	Draco tera KVM CON Unit, Single-Head, 2x USB-HID
L474-BSHCV	Draco tera KVM CPU Unit, Single-Head, DVI-I input (VGA), 2x USB-HID
R474-BSHCV	Draco tera KVM CON Unit, Single-Head, IR receiver, 2x USB-HID

KVM Extender with Fiber Connection (Single-Mode), K477 Series

Type	Description
L477-1SHS	Draco tera KVM CPU Unit, Single-Head, 2x USB-HID
R477-1SHS	Draco tera KVM CON Unit, Single-Head, 2x USB-HID
L477-1S4SA	Draco tera KVM CPU Unit, Single-Head, Analog Audio, 4x USB-HID
R477-1S4SA	Draco tera KVM CON Unit, Single-Head, Analog-Audio, 4x USB-HID
L477-1S4SD	Draco tera KVM CPU Unit, Single-Head, Digital Audio, 4x USB-HID
R477-1S4SD	Draco tera KVM CON Unit, Single-Head, Digital Audio, 4x USB-HID

Type	Description
L477-1STS	Draco tera KVM CPU Unit, Single-Head, 2x USB-HID, 4x USB 2.0
R477-1STS	Draco tera KVM CON Unit, Single-Head, 2x USB-HID, 4x USB 2.0
L477-2S4S	Draco tera KVM CPU Unit, Dual-Head, 4x USB-HID
R477-2S4S	Draco tera KVM CON Unit, Dual-Head, 4x USB-HID
L477-SHSV	Draco tera KVM CPU Unit, Single-Head, DVI-I input (VGA), 2x USB-HID

KVM Extender with Fiber Connection (Single-Mode), K474 Series

Type	Description
L474-BSHS	Draco tera KVM CPU Unit, Single-Head, 2x USB-HID
R474-BSHS	Draco tera KVM CON Unit, Single-Head, 2x USB-HID
L474-BSHSV	Draco tera KVM CPU Unit, Single-Head, DVI-I Input (VGA), 2x USB-HID
R474-BSHSV	Draco tera KVM CON Unit, Single-Head, IR receiver, 2x USB-HID

7.3.2 USB 2.0 Extender

USB 2.0 Extender with Cat X Connection, K474 Series

Type	Description
L474-BXTC	Draco tera USB 2.0 CPU Unit, 4x USB 2.0
R474-BXTC	Draco tera USB 2.0 CON Unit, 4x USB 2.0

USB 2.0 Extender with Fiber Connection (Single-Mode), K474 Series

Type	Description
L474-BXTS	Draco tera USB 2.0 CPU Unit, 4x USB 2.0
R474-BXTS	Draco tera USB 2.0 CON Unit, 4x USB 2.0

7.3.3 Video-Extender

!Text kommt!

7.4 Serial Control

To control the Draco tera via serial interface, the following parameters certain parameters are used.

In order to communicate set the format for serial data transmission.

115.2K, 8, 1, NO
(115.2 KBAUD, 8 data bits, 1 stop bit, no parity)

Command

<STX>, <command byte (CMD)>, [data bytes (D0…DN)], <ETX>

[ ] = Optional elements

Response

<ACK> , [<ECHO>]

[ ] = Optional elements

<ECHO> reports the matrix sequences solicited by a command and thus the new switching status of the matrix. The echo can be used to update user applications and to operate several matrices in parallel.

Parameter Description

Command byte:	In the range 0x40 to 0x6F (see list of allowed commands below)
Data bytes:	**a) Binary data:** In order to prevent that, during the transmission of binary data, control statements of control commands are transferred, the data are divided into low-nibble and high-nibble. The data are distributed to the low-nibbles of two bytes and provided with an offset by 0x60 e.g. 0x1F => 0x61 + 0x6F **b) 7bit data:** (0x0 to 0x7F) are provided with an offset by 0x80, e.g. 0000011 => 0x83 **c) ASCII data** => 0x20 to 0x7E are transmitted unencryptedly.

(Special) characters:	ACK	0x06
	NAK	0x15
	STX	0x02
	ETX	0x03
	CR	0x0D
	ESC	0x1B
	HTAB	0x09
	LF	0x0A

Sequence of a Data Communication

Draco tera Matrix	Control CPU
–	Sending of a command
Acquiring of a command, processing of a command, blocking of further commands	–
a) Errors occurred: <NAK> b) No errors: <ACK><ECHO> c) Optional: Reply telegram with data	–
–	a) Repeat telegram b) Next command c) Receive and process the repeat telegram

The serial interface can be blocked while OSD has been opened.

7.4.1 Telegrams of the Switching Functions

Request of Input Port for Output Port

Bytes	Description	Coding
1	Control character	0x1B
1	Server identification	0X5B
1	Command	0x42
2	Total length of telegram (7 bytes, binary)	0x07 0x00
2	Requested output port (binary, 1…max. ports)	0x01 0x00 (for port 1) to 0x120 0x00 (for port 288)

Example:

Request of input port for output port 160

0x1B 0x5B 0x42 0x07 0x00 0xA0 0x00

Return of Input Port for Output Port

Bytes	Description	Coding
1	Control character	0x1B
1	Server identification	0X5D
1	Command	0x42
2	Total length of telegram (9 bytes, binary)	0x09 0x00
2	Requested output port (binary, 1…max. ports)	0x01 0x00 (for port 1) to 0x120 0x00 (for port 288)
2	Assigned input port (binary, 1…max. ports)	0x01 0x00 (for port 1) to 0x120 0x00 (for port 288)

Example:

Return of input port 17 for output port 160

0x1B 0x5D 0x42 0x09 0x00 0xA0 0x00 0x11 0x00

Connection of Input Port with Output Port

Bytes	Description	Coding
1	Control character	0x1B
1	Server identification	0X5B
1	Command	0x43
2	Total length of telegram (9 bytes, binary)	0x09 0x00
2	Requested output port (binary, 1…max. ports)	0x01 0x00 (for port 1) to 0x120 0x00 (for port 288)
2	Assigned input port (binary, 1…max. ports)	0x01 0x00 (for port 1) to 0x120 0x00 (for port 288)

Example:

Connection of input port 17 with output port 160

0x1B 0x5B 0x43 0x09 0x00 0xA0 0x00 0x11 0x00

Request of Input Port for Output Port with a fixed total Port Number

Bytes	Description	Coding
1	Control character	0x1B
1	Server identification	0X5B
1	Command	0x44
2	Total length of telegram (9 bytes, binary)	0x09 0x00
2	Number of output ports (binary, 1…max. 287 ports)	0x01 0x00 (for 1 port) to 0x11F 0x00 (for 287 ports)
2	Requested output port (binary, 1…max. ports)	0x01 0x00 (for port 1) to 0x120 0x00 (for port 288)

Example:

Request of input port for output port 25 with a total port number of 160

0x1B 0x5B 0x44 0x09 0x00 0xA0 0x00 0x19 0x00

Return of Input Port for Output Port with a fixed Port Number

Bytes	Description	Coding
1	Control character	0x1B
1	Server identification	0X5D
1	Command	0x44
2	Total length of telegram (7 bytes, binary)	0x07 0x00
2	Number of output ports (binary, 1…max. 288 ports)	0x01 0x00 (for 1 port) to 0x11F 0x00 (for 287 ports)

Example:

Return of input port 17 for output port 25 with a total port number of 160

0x1B 0x5D 0x44 0x09 0x00 0xA0 0x00 0x19 0x00 0x11 0x00

Connection of Input Port with Output Port with a fixed total Port Number

Bytes	Description	Coding
1	Control character	0x1B
1	Server identification	0X5B
1	Command	0x45
2	Total length of telegram (7 bytes, binary)	0x07 0x00
2	Number of output ports (binary, 1…max. 287 ports)	0x01 0x00 (for 1 ports) to 0x11F 0x00 (for 287 ports)

Example:

Connection of input port 17 with output port 25 with a total port number of 160

0x1B 0x5B 0x45 0x07 0x00 0xA0 0x00 0x19 0x00 0x11 0x00

Request of Switching Matrix

Bytes	Description	Coding
1	Control character	0x1B
1	Server identification	0X5B
1	Command	0x46

Return of the Switching Matrix (Input Port for all Output Ports)

Bytes	Description	Coding
1	Control character	0x1B
1	Server identification	0X5D
1	Command	0x46
2	Total length of telegram (7 bytes, binary)	0x07 0x00
2	Input port whose signal is send to output port OutPort (n)	0x01 0x00 (for 1 port) to 0x120 0x00 (for 288 ports)

Example:

Return input port 17 for all output ports

0x1B 0x5D 0x46 0x07 0x00 0x11 0x00

Request of CPU (Input) for CON (Output)

Bytes	Description	Coding
1	Control character	0x1B
1	Server identification	0X5B
1	Command	0x47
2	Total length of telegram (7 bytes, binary)	0x07 0x00
2	Requested output console	0x01 0x00 (for console 1) to 0x11F 0x00 (for console 287)

Example:

Request of CPU (input) for console 23

0x1B 0x5B 0x47 0x07 0x00 0x17 0x00

Return of CPU (Input) for CON (Output)

Bytes	Description	Coding
1	Control character	0x1B
1	Server identification	0X5D
1	Command	0x47
2	Total length of telegram (9 bytes, binary)	0x09 0x00
2	Requested output console	0x01 0x00 (for console 1) to 0x11F 0x00 (for console 287)
2	Requested input CPU	0x01 0x00 (for CPU 1) to 0x11F 0x00 (for CPU 287)

Example:

Return of CPU 34 for console 23

0x1B 0x5D 0x47 0x09 0x00 0x17 0x00 0x22 0x00

Connection of CPU (Input) with CON (Output)

Bytes	Description	Coding
1	Control character	0x1B
1	Server identification	0X5B
1	Command	0x48
2	Total length of telegram (9 bytes, binary)	0x09 0x00
2	Requested console	0x01 0x00 (for console 1) to 0x11F 0x00 (for console 287)
2	Requested CPU	0x01 0x00 (for CPU 1) to 0x11F 0x00 (for CPU 287)

Example:

Connection of CPU 43 with console 23

0x1B 0x5B 0x48 0x09 0x00 0x17 0x00 0x2B 0x00

Request of CPU (Input) for CON (Output with a fixed Console Number

Bytes	Description	Coding
1	Control character	0x1B
1	Server identification	0X5B
1	Command	0x49
2	Total length of telegram (9 bytes, binary)	0x09 0x00
2	Total number of consoles (binary, 1...max. CONs)	0x01 0x00 (for 1 console) to 0x11F 0x00 (for 287 consoles)
2	Requested consoles	0x01 0x00 (for console 1) to 0x11F 0x00 (for console 287)

Example:

Request of CPU (input) for console 23 with 50 consoles in total

0x1B 0x5B 0x49 0x09 0x00 0x32 0x00 0x17 0x00

Return of CPU (Input) for CON (Output) with a fixed Console Number

Bytes	Description	Coding
1	Control character	0x1B
1	Server identification	0X5D
1	Command	0x49
2	Total length of telegram (7 bytes, binary)	0x07 0x00
2	Total number of consoles (binary, 1...max. CONs)	0x01 0x00 (for 1 console) to 0x11F 0x00 (for 287 consoles)

Example:

Return of CPU 43 for console 23 with 50 consoles in total

0x1B 0x5D 0x49 0x07 0x00 0x32 0x00 0x17 0x00 0x2B 0x00

Connection of CPU (Input) with CON (Output) with a fixed Console Number

Bytes	Description	Coding
1	Control character	0x1B
1	Server identification	0X5B
1	Command	0x50
2	Total length of telegram (7 bytes, binary)	0x07 0x00
2	Total number of consoles (binary, 1...max. CONs)	0x01 0x00 (for 1 console) to 0x11F 0x00 (for 287 consoles)

Example:

Connection of 43 with console 23 with 50 consoles in total

0x1B 0x5B 0x50 0x07 0x00 0x32 0x00 0x17 0x00 0x2B 0x00

Request of CON (Input) for CPU (Output)

Bytes	Description	Coding
1	Control character	0x1B
1	Server identification	0X5B
1	Command	0x51
2	Total length of telegram (7 bytes, binary)	0x07 0x00
2	Requested output for CPU	0x01 0x00 (for CPU 1) to 0x11F 0x00 (for CPU 287)

Example:

Request of CON (input) for CPU 23

0x1B 0x5B 0x51 0x07 0x00 0x17 0x00

Return of CON (Input) for CPU (Output)

Bytes	Description	Coding
1	Control character	0x1B
1	Server identification	0X5D
1	Command	0x51
2	Total length of telegram (9 bytes, binary)	0x09 0x00
2	Requested output CPU	0x01 0x00 (for CPU 1) to 0x11F 0x00 (for CPU 287)
2	Requested input console	0x01 0x00 (for console 1) to 0x11F 0x00 (for console 287)

Example:

Request of console 23 for CPU 43

0x1B 0x5D 0x51 0x09 0x00 0x2B 0x00 0x17 0x00

Connection of CON (Input) with CPU (Output)

Bytes	Description	Coding
1	Control character	0x1B
1	Server identification	0X5B
1	Command	0x52
2	Total length of telegram (9 bytes, binary)	0x09 0x00
2	Requested output CPU	0x01 0x00 (for CPU 1) to 0x11F 0x00 (for CPU 287)
2	Requested input console	0x01 0x00 (for console 1) to 0x11F 0x00 (for console 287)

Example:

Connection of console 23 with CPU 43

0x1B 0x5B 0x52 0x09 0x00 0x2B 0x00 0x17 0x00

Request CON (Input) for CPU (Output) with a fixed CPU number

Bytes	Description	Coding
1	Control character	0x1B
1	Server identification	0X5B
1	Command	0x53
2	Total length of telegram (9 bytes, binary)	0x09 0x00
2	Total number of CPUs	0x01 0x00 (for 1 CPU) to 0x11F 0x00 (for 159 CPUs)
2	Requested output for CPU (binary, 1…max. CPUs)	0x01 0x00 (for CPU 1) to 0x11F 0x00 (for CPU 287)

Example:

Request for CPU 43 with 50 CPUs in total

0x1B 0x5B 0x53 0x09 0x00 0x32 0x00 0x2B 0x00

Return of CON (Input) for CPU (Output) with a fixed CPU Number

Bytes	Description	Coding
1	Control character	0x1B
1	Server identification	0X5D
1	Command	0x53
2	Total length of telegram (7 bytes, binary)	0x07 0x00
2	Total number of CPUs	0x01 0x00 (for 1 CPU) to 0x11F 0x00 (for 287 CPUs)

Example:

Return of console 23 for CPU 43 with 50 CPUs in total

0x1B 0x5D 0x53 0x07 0x00 0x32 0x00 0x2B 0x00 0x17 0x00

Connection of CON (Input) with CPU (Output) with a fixed total CPU Number

Bytes	Description	Coding
1	Control character	0x1B
1	Server identification	0X5B
1	Command	0x54
2	Total length of telegram (7 bytes, binary)	0x07 0x00
2	Total number of CPUs	0x01 0x00 (for 1 CPU) to 0x11F 0x00 (for 287 CPUs)

Example:

Connection of console 23 with CPU 43 with 50 CPUs in total

0x1B 0x5B 0x54 0x07 0x00 0x32 0x00 0x2B 0x00 0x17 0x00

Connection of CON (Input) with CPU (Output) and CPU (Input) with CON (Output)

Bytes	Description	Coding
1	Control character	0x1B
1	Server identification	0X5B
1	Command	0x55
2	Total length of telegram (9 bytes, binary)	0x09 0x00
2	Requested CPU	0x01 0x00 (for CPU 1) to 0x11F 0x00 (for CPU 287)
2	Requested console	0x01 0x00 (for console 1) to 0x11F 0x00 (for console 287)

Example:

Connection of console 23 (input) with CPU 43 (output)

0x1B 0x5B 0x55 0x09 0x00 0x2B 0x00 0x17 0x00

Connection of CON (Input) with CPU (Output) and CPU (Input) with CON (Output) with a fixed CPU Number

Bytes	Description	Coding
1	Control character	0x1B
1	Server identification	0X5B
1	Command	0x56
2	Total length of telegram (7 bytes, binary)	0x07 0x00
2	Total number of CPUs	0x01 0x00 (for 1 CPU) to 0x11F 0x00 (for 287 CPUs)

Example:

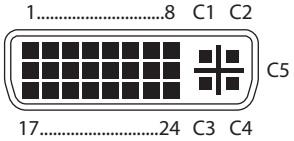
Connection of console 23 with CPU 43 and console 24 with CPU 44 with 50 existing CPUs

0x1B 0x5B 0x56 0x07 0x00 0x32 0x00 0x2B 0x00 0x17 0x00 0x2C 0x00 0x18 0x00

7.5 Connector Pinouts

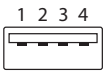
7.5.1 CPU Board

Connector DVI-D Single-Link

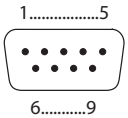


Pin	Signal	Pin	Signal	Pin	Signal
1	T.M.D.S data 2 –	9	T.M.D.S data 1 –	17	T.M.D.S data 0 –
2	T.M.D.S data 2 +	10	T.M.D.S data 1 +	18	T.M.D.S data 0 +
3	T.M.D.S data 2 GND	11	T.M.D.S data 1 GND	19	T.M.D.S data 0 GND
4	n.c.	12	n.c.	20	n.c.
5	n.c.	13	n.c.	21	n.c.
6	DDC Input (SCL)	14	+5VDC high impedance	22	T.M.D.S clock GND
7	DDC Output (SDA)	15	GND	23	T.M.D.S clock +
8	Internal use	16	Hot Plug recognition	24	T.M.D.S clock –
C1	Internal use			C3	Internal use
C2	n.c.	C5	GND	C4	Internal use

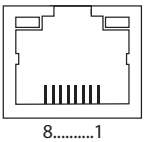
Connector USB Type A

Picture	Pin	Signal	Color
	1	VCC (+5VDC)	Red
	2	Data –	White
	3	Data +	Green
	4	GND	Black

D-Sub 9 (Serial)

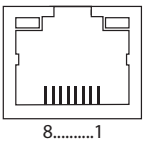
Picture	Pin	Signal	Pin	Signal
	1	n.c.	6	DTR
	2	CTS	7	TxD
	3	RTS	8	RxD
	4	DSR	9	n.c.
	5	GND		

RJ45

Picture	Pin	Signal	Pin	Signal
	1	D1+	5	n.c
	2	D1–	6	D2–
	3	D2+	7	n.c
	4	n.c	8	n.c

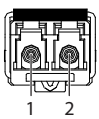
7.5.2 I/O Board Cat X

RJ45

Picture	Pin	Signal	Pin	Signal
	1	D1+	5	D3–
	2	D1–	6	D2–
	3	D2+	7	D4+
	4	D3+	8	D4–

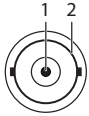
7.5.3 I/O Board SFP

Fiber SFP Typ LC

Picture	Diode	Signal
	1	Data OUT
	2	Data IN

7.5.4 I/O Board SDI

Mini BNC (SDI)

Picture	Pin	Signal
	1	Data IN
	2	GND

7.6 Power Supply

Voltage	100-240V~, 50-60Hz

Strombedarf

Draco tera 288	max. 202 W without I/O boards
Draco tera 160	max. 188 W without I/O boards
Draco tera 80	max. 99 W without I/O boards
Draco tera 48	max. 94 W without I/O boards
Draco tera 8	max. 15 W without I/O boards
I/O Board	max. 13 W

7.7 Environmental Conditions

Operating Temperature	41 to 113°F (5 to 45°C)
Storage Temperature	–13 to 140°F (–25 to 60°C)
Relative Humidity	Max. 80% non-condensing

7.8 Size

Draco tera 288

Matrix	483 x 578 x 330 mm (19.0" x 22.8" x 12.0")
Shipping Box	650 x 680 x 760 mm (25.6" x 26.8" x 29.9")

Draco tera 160

Matrix	483 x 400 x 330 mm (19.0" x 15.8" x 12.0")
Shipping Box	650 x 680 x 540 mm (25.6" x 26.8" x 21.3")

Draco tera 80

Matrix	483 x 178 x 230 mm (19.0" x 7.0" x 9.1")
Shipping Box	640 x 570 x 360 mm (25.2" x 22.4" x 14.2")

Draco tera 48

Matrix	483 x 133 x 230 mm (19.0" x 5.3" x 9.1")
Shipping Box	640 x 570 x 316 mm (25.2" x 22.4" x 12.4")

Draco tera 8

Matrix	
Shipping Box	

7.9 Shipping Weight

Draco tera 288

Matrix	34.6 kg (76.2 lb) fully equipped
Shipping Box	41.1 kg (90.6 lb)

Draco tera 160

Matrix	26.3 kg (60.0 lb) fully equipped
Shipping Box	31.7 kg (69.9 lb)

Draco tera 80

Matrix	11.1 kg (24.5 lb) fully equipped
Shipping Box	15.6 kg (34.4 lb)

Draco tera 48

Matrix	8.9 kg (19.6 lb) fully equipped
Shipping Box	12.1 kg (26.7 lb)

Draco tera 8

Matrix	
Shipping Box	

8 Troubleshooting

In the following chapters support for problems with the Draco tera matrix is provided. This help is based as regards content on a functional extender route. Please ensure before running your extenders with the matrix that they work over a peer-to-peer connection. This can be supported by the use of a Cat X or fiber coupler. If you have problems referring to this, the manuals of the respective extenders will offer support.

8.1 External Failure

Diagnosis	Possible Reason	Measure
Matrix cannot be started anymore.	Fuse at the standard appliance outlet.	➔ Check fuse.

8.2 Video Interference

Diagnosis	Possible Reason	Measure
Opening the OSD not possible	No OSD jumper set	➔ Set jumper 11 on the CON unit.
Incorrect video display	Cable connection disturbed	➔ Check the connection, length and quality of the interconnect cable to the units.

8.3 Malfunction of Fans

Diagnosis	Possible Reason	Measure
Fans only run under full load	Communication to fan tray is disturbed	➔ Removal and und reinstallation of the fan tray
Fans do not run, LED **OK** on	Fans defective	➔ Contact your dialer
Fans do not run, LED **OK** off	Power supply	➔ Check power supply and power connection

8.4 Malfunction of Power Supply Units

Diagnosis	Possible Reason	Measure
Matrix cannot be started	Power supply units not locked correctly	➔ Check lock and plug-in of the power supply units
	No power supply available	➔ Check, if cables for the power supply are connected correctly
	Power supply units are not switched on	➔ Check slide to switch on the power supply units

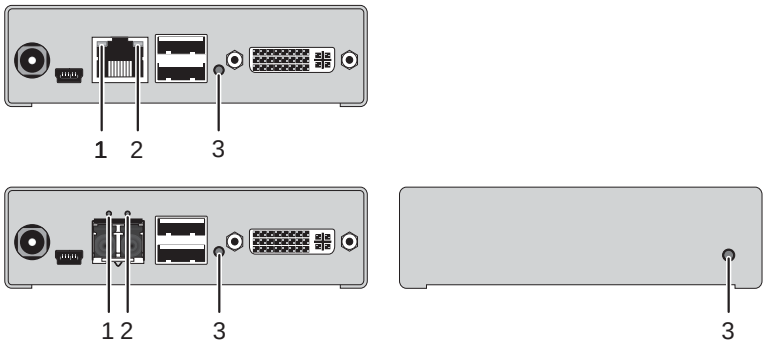
8.5 Network Error

Diagnosis	Possible Reason	Measure
Network settings are not assumed after editing.	Restart of the matrix not yet completed.	➔ Do a restart.

8.6 Failure at the Matrix

Diagnosis	Possible Reason	Measure
Serial control impossible or only restrictedly possible.	Different Baud rate of CPU and matrix.	➔ Adapt Baud rate in the matrix and in the CPU (see Chapter 5.3.2, Page 56).
Serial control via RJ45 port not possible.	Wrong network cable.	➔ Use a crossed network cable
Port definitions as USB 2.0 invalid.	Restart of the matrix not yet completed.	➔ Do a restart.

8.7 Blank Screen



Rear View *Front View*

Diagnosis	Possible Reason	Measure
Monitors remains dark after switching operation	Switching to a CPU Port without active Source (computer, CPU).	➔ Switching to a CPU Port with an active source (computer, CPU).
	Connection of a console with a CON port or connection of a CPU to a CPU port not established correctly.	➔ Check connections regarding CON and CPU ports at the matrix.
LED **1** on or LED **2** off	Connections CON unit, matrix and CPU unit.	➔ Check connecting cables and connectors. (No cable, cable break, CPU/CON unit offline, CPU/CON unit connected to the wrong port)
LED **3** off	Power supply	➔ Check power supply units and the connection to the power network.

9 Technical Support

Prior to contacting support please ensure you have read this manual, and then installed and set-up your Draco tera as recommended.

9.1 Support Checklist

To efficiently handle your request it is necessary to complete our checklist for support and problem cases (Download). Keep the following information available before you call:

- Company, name, phone number and email
- Type and serial number of the device (see bottom of device)
- Date and number of sales receipt, name of dealer if necessary
- Issue date of the existing manual
- Nature, circumstances and duration of the problem
- Involved components (such as graphic source/CPU, OS, graphic card, monitor, USB-HID/USB 2.0 devices, interconnect cable) including manufacturer and model number
- Results from any testing you have done

9.2 Shipping Checklist

1. To return your device, contact your dealer to obtain a RMA number (Return-Material-Authorization).
2. Package your devices carefully, preferably using the original box. Add all pieces which you received originally.
3. Note your RMA number visibly on your shipment.

Devices that are sent in without a RMA number cannot be accepted. The shipment will be sent back without being opened, postage unpaid.

10 Certificates

10.1 CE Declaration Of Conformity

The products listed below in the form as delivered comply with the provisions of the following European Directives:

2004/108/EG Council Directive on the approximation of the laws of the Member States relating to electromagnetic compatibility

CE Marking 2009

Product list:

480 Series

The products comply with the following harmonized standards for Information Technology Equipment:

- EN 55022:2006 + A1:2007 (Class A)
- EN 55024:1998 + A1:2001 + A2:2003

This declaration certifies the conformity to the specified directives but contains no assurance of properties. The safety instructions and installation guidelines noted in this manual shall be considered in detail. Compliance with the specifications for cable lengths and types is mandatory.

Manufacturer:

IHSE GmbH
Maybachstrasse 11
88094 Oberteuringen
Deutschland

Oberteuringen, 26 January 2010

The Management

Use in a Domestic Environment

This is a Class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

10.2 North American Regulatory Compliance

This equipment has been found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Shielded cables must be used with this equipment to maintain compliance with radio frequency energy emission regulations and ensure a suitably high level of immunity to electromagnetic disturbances.

All power supplies are certified to the relevant major international safety standards.

10.3 WEEE

The manufacturer complies with the EC Directive 2002/96/EG on the prevention of waste electrical and electronic equipment (WEEE).

The device labels carry a respective marking.

10.4 RoHS

This device complies with the EC Directive 2002/95/EG on the Restriction of the use of certain Hazardous Substances in electrical and electronic equipment (RoHS).

The device labels carry a respective marking.

11 Glossary

The following terms are commonly used in this guide or in video and KVM technology:

Term	Explanation
AES/EBU	Digital audio standard that is officially known as AES3 and that is used for carrying digital audio signals between devices.
Cat X	Any Cat 5e (Cat 6, Cat 7) cable
CGA	The Color Graphics Adapter (CGA) is an old analog graphic standard with up to 16 displayable colors and a maximum resolution of 640x400 pixels.
Component Video	The Component Video (YPbPr) is a high-quality video standard that consists of three independently and separately transmittable video signals, the luminance signal and two color difference signals.
Composite Video	The Composite Video is also called CVBS and it is part of the PAL TV standard.
CON Unit	Component of a Draco tera or Media Extender to connect to the console (monitor(s), keyboard and mouse; optionally also with USB 2.0 devices)
CPU Unit	Component of a Draco tera or Media Extender to connect to a source (computer, CPU)
DDC	The Display Data Channel (DDC) is a serial communication interface between monitor and source (computer, CPU. It allows a data exchange via monitor cable and an automatic installation and configuration of a monitor driver by the operating system.
Dual Access	A system to operate a source (computer, CPU) from two consoles
Dual-Head	A system with two video connections
Dual Link	A DVI-D interface for resolutions up to 2560x2048 by signal transmission of up to 330 MPixel/s (24-bit)
DVI	Digital video standard, introduced by the Digital Display Working Group (http://www.ddwg.org). Single Link and Dual Link standard are distinguished. The signals have TMDS level.

Term	Explanation
DVI-I	A combined signal (digital and analog) that allows running a VGA monitor at a DVI-I port – in contrast to DVI-D (see DVI).
Fiber	Single-mode or multi-mode fiber cables
EGA	The Enhanced Graphics Adapter (EGA) is an old analog graphic standard, introduced by IBM in 1984. A D-Sub 9 connector is used for connection.
Console	Keyboard, mouse and monitor
CVBS	The analog color video baseband signal (CVBS) is also called Composite Video and it is part of the PAL TV standard.
KVM	Keyboard, video and mouse
Mini-XLR	Industrial standard for electrical plug connections (3 pole) for the transmission of digital audio and control signals
Multi-mode	62.5µ multi-mode fiber cable or 50µ multi-mode fiber cable
OSD	The On-Screen-Display is used to display information or to operate a device.
Quad-Head	A system with four video connections
RCA (Cinch)	A not standardized plug connection for transmission of electrical audio and video signals, especially with coaxial cables
SFP	SFPs (Small Form Factor Pluggable) are pluggable interface modules for Gigabit connections. SFP modules are available for Cat X and fiber interconnect cables.
S/PDIF	A digital audio interconnect that is used in consumer audio equipment over relatively short distances.
Single-Head	A system with one video connection
Single Link	A DVI-D interface for resolutions up to 1920x1200 by signal transmission of up to 165 MPixel/s (24-bit). Alternative frequencies are Full HD (1080p), 2K HD (2048x1080) and 2048x1152.
Single-mode	9µ single-mode fiber cable
S-Video (Y/C)	The S-Video (Y/C) is a video format transmitting luminance and chrominance signals separately. Thereby it has a higher quality standard than CVBS.

Term	Explanation
TOSLINK	Standardized fiber connection system for digital transmission of audio signals (F05 plug connection)
Triple-Head	A system with three video connections
USB-HID	USB-HID devices (Human Interface Device) allow for data input. There is no need for a special driver during installation; "New USB-HID device found" is reported. Typical HID devices include keyboards, mice, graphics tablets and touch screens. Storage, video and audio devices are **not** HID.
VGA	Video Graphics Array (VGA) is a computer graphics standard with a typical resolution of 640x480 pixels and up to 262,144 colors. It can be seen as a follower of the graphics standards MDA, CGA and EGA.

11.1 Matrix specific Glossary

Term	Explanation
Auto Disconnect	Matrix function that allows an automatic disconnect between a console and a CPU, if OSD is opened via this console.
Auto Logout	Matrix function that describes the duration of inactivity after the user haws been logged out from the OSD at this console.
CON Device	Logical term that summarizes several physical extenders to switch more complex console systems via matrix.
CON Timeout	Matrix function that allows an automatic disconnect of the own console from the connected CPU after a predefined time.
Console ACL	Console Access Control List is a list that shows the respective switching rights for the various consoles.
CPU Auto Connect	Matrix function that allows an automatic connection establishment between the own console and a random CPU that is available.
CPU Device	Logical term that summarizes several physical extenders to switch more complex CPU systems via matrix.
CPU Timeout	Matrix function that allows the user to disconnect after a predefined period of time of inactivity from the respective CPU.
EXT Unit	Part or extender board of a CON or CPU unit with a connection to the matrix. A CON or CPU unit can consist of several EXT devices.
Force Connect	Matrix function that allows to switch with the own console to a CPU that is already used and in doing so to take keyboard and mouse control. The connected console so far loses K/M control, but keeps video.
Force Disconnect	Matrix function that allows to switch with the own console to a CPU that is already used and in doing so to take KVM control. The connected console so far loses complete KVM control.
Java Tool	Java based control and configuration tool for the Draco tera matrix.

Term	Explanation
Keyboard Connect	Matrix function that allows taking over the keyboard control of an inactive console.
Macro Keys	Programmable keys that can execute a stringing together of commands to the matrix.
Mouse Connect	Matrix function that allows taking the mouse control of an inactive console.
Non-Blocking-Access	Matrix configuration where no user can be disturbed by an activity of another user.
OSD Timeout	Matrix function that closes the OSD automatically after a predefined period of time of inactivity.
Release Time	Matrix function that allows a console that is connected with the same CPU to release the K/M control after a predefined time.
Tie-Line	Communication connection to and between extension modules in a network environment.
User ACL	User Access Control List is a list that shows the respective switching rights fort he various users.
Video Sharing	Matrix function that allows switching from the own console to any CPU with video.